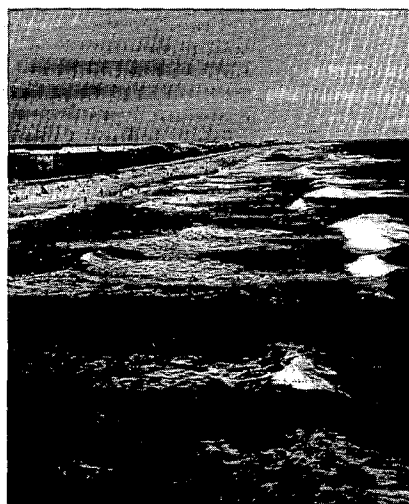


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STRIKING A BALANCE

Reflections on Ten Years
of Managing the North Carolina Coast

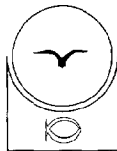
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STRIKING A BALANCE

Reflections on Ten Years
of Managing the North Carolina Coast

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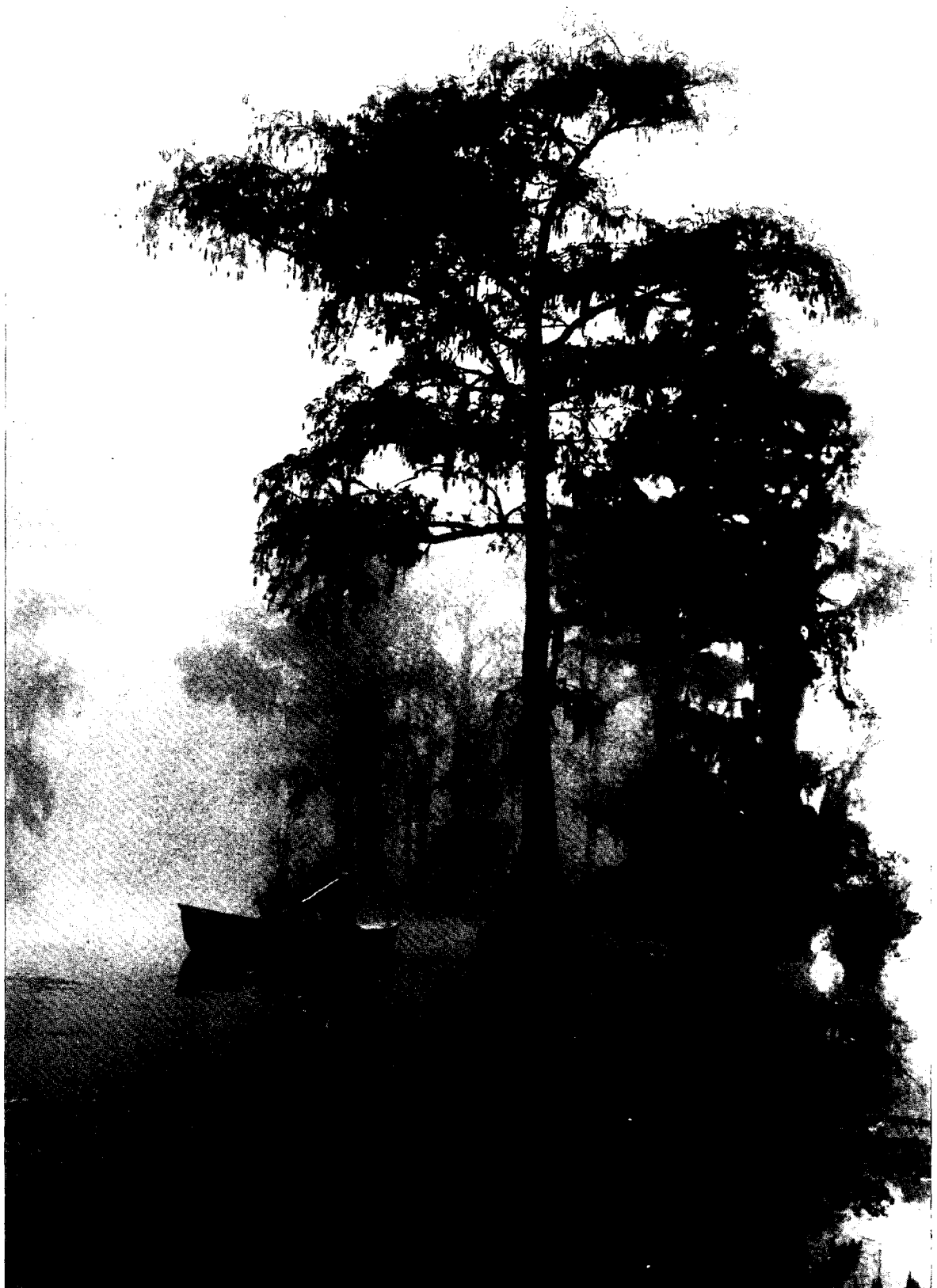


Division of Coastal Management
North Carolina Department of Natural Resources and Community Development

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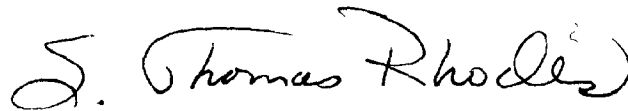


North Carolina has been blessed with a unique and irreplaceable natural resource — its coastal area. Its beaches, sounds, rivers, and marshes make up a natural system that has for centuries provided both residents and visitors an unparalleled bounty of recreation, seafood, forestry, and agriculture.

North Carolina was among the first states to recognize that its coastal resources need special care and attention. We recognized that competing uses and intensive development pressures could, if not managed, destroy the very features that make our coast so attractive. So in 1974 we embarked upon an ambitious and progressive coastal management program.

We have learned a great deal in the ensuing ten years. This report collects the thoughts of some of our leading citizens and participants in this venture about those lessons.

Our charge now is to thoughtfully consider these lessons and rededicate ourselves to carrying forward a reasonable and effective program, one that assures the continued protection and enjoyment of our God-given coastal resources.

A handwritten signature in black ink that reads "S. Thomas Rhodes". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

S. Thomas Rhodes, Secretary
North Carolina
Department of Natural Resources
and Community Development



PREFACE

Those of us who work in one area or another of public policy often find ourselves trying to express complicated ideas to a broad audience in three lines of newsprint or thirty-second television interviews. I wonder, then, how frequently we make our point. We want people to understand the issues we face so that they can decide how to deal with the resulting problems, and yet we are trapped by the contradictory goals of communicating efficiently and communicating effectively. Almost any effort to explain the details of a situation — those subtleties needed to fully describe what is happening — will almost certainly be reduced to a few moments of incoherence or, even worse, a bland, meaningless statement which could apply to almost any problem.

This book is an attempt to overcome these difficulties inherent in explaining complex coastal resource issues and management activities to the public. We have assembled here background information, essays, and commentaries which expand on the headlines that have accompanied the Coastal Area Management Act since its passage in 1974 and the subsequent establishment of the North Carolina Coastal Management Program.

The essays, most of which were written by the people who were involved with the creation of the coastal program, explain its principal activities and how it functions. These "reflections" describe the heart of "coastal management," that broad term we use to describe a variety of activities. The commentaries were written by people who, in representing a wide range of interest groups, have actively taken part in coastal affairs. They offer ideas about the directions the coastal program should take in the future, and make suggestions about how coastal problems can be addressed.

The catalyst for this reflection is the tenth anniversary of the passage of the Coastal Area

Management Act. The recognition of that anniversary began in July 1984 and since has generated much discussion of the goals and future of the program, primarily through the Tenth Anniversary Celebration of the Coastal Resources Commission and the Coastal Roundtable Series held by the Coastal Resources Advisory Council. This book is intended to complement the ongoing analysis of the coastal program by collecting the impressions of some of the program's keenest observers throughout the years. I thank these contributors for taking the time to write down their thoughts on the coastal program, thus making this in-depth look at the program possible.

I hope reading the essays and commentaries will lead you to ask us questions: Why was this problem overlooked? Wouldn't a different approach accomplish that goal more effectively? For it has been the questions, the comments, and, most importantly, the ideas which have driven the coastal management program.

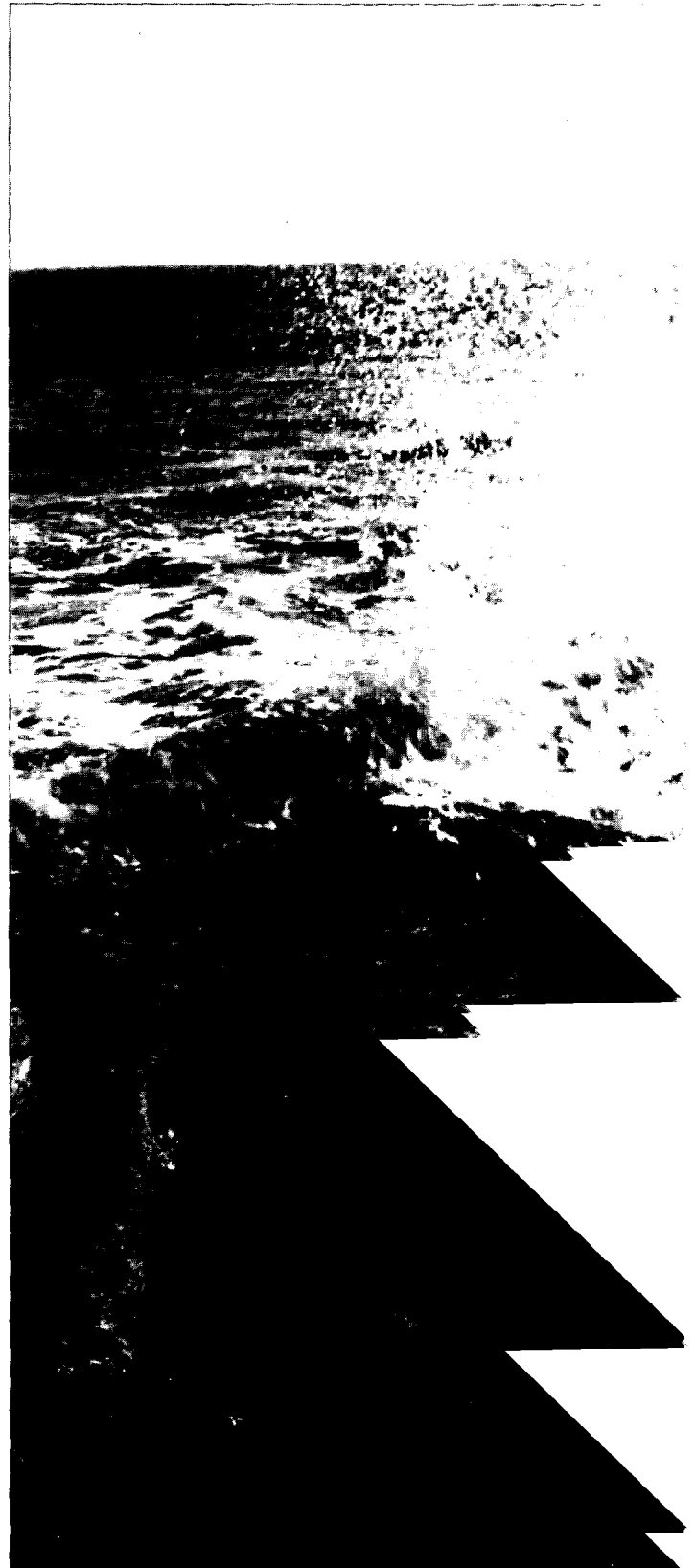
From the late 1960s when the first question was asked — How can we stop the destruction of irreplaceable coastal resources? — until the present, the search for answers has involved hundreds of people throughout the coastal area and the state, generating an uncommon commitment to natural resource protection. That commitment has led to the development of a management program which is both strong enough to protect the coast and flexible enough to provide for the interests of the individuals who live there.

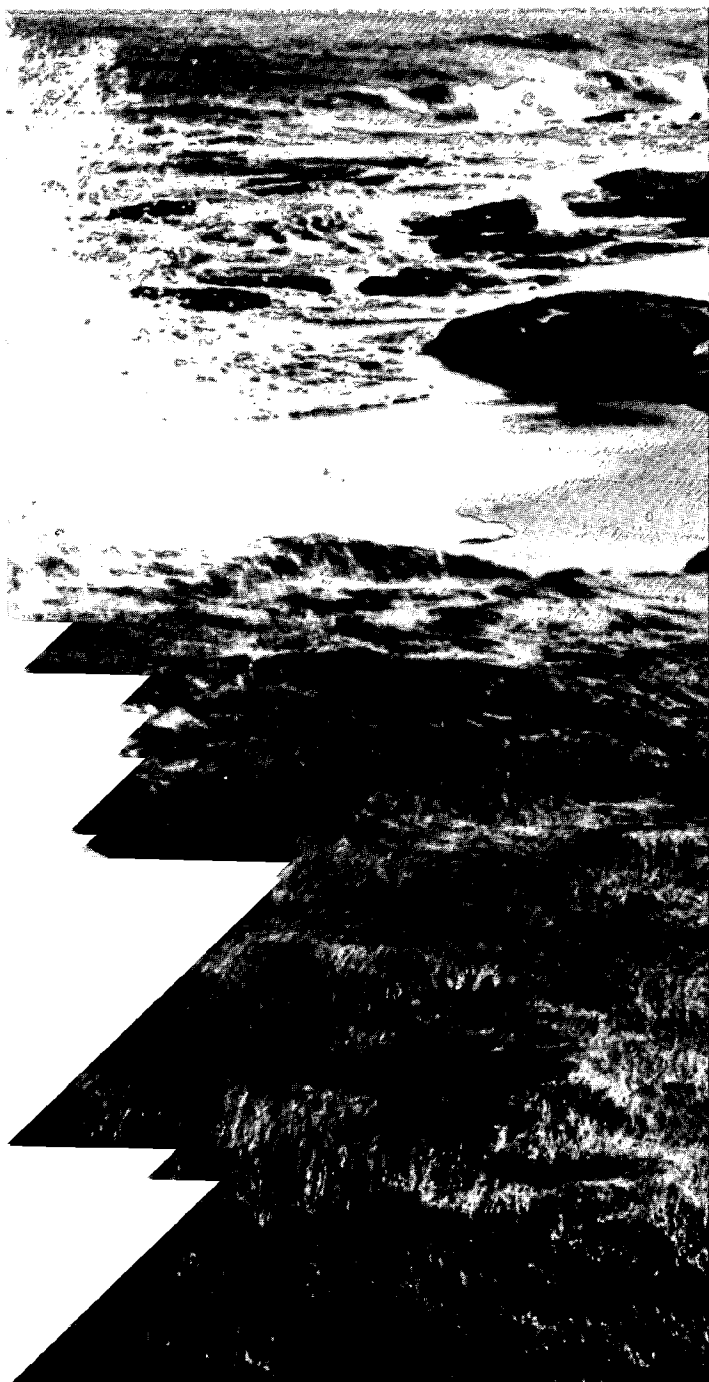
There are still plenty of questions to be asked and answers to be sought. Let us hear from you.

David W. Owens, Director
Division of Coastal Management

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INTRODUCTION



Complex, dynamic, interrelated — these are the words frequently used to describe the coastal area. They also describe, not coincidentally, the North Carolina Coastal Management Program.

To maintain the quality of North Carolina's barrier islands, wetlands, sounds, and tidal rivers, they must be managed as the whole, interdependent system that they are. The lands and waters of the coast are intricately connected by countless biophysical links and loops; what appears to be one simple action can rapidly become a series of actions and reactions with unforeseen effects. The consequences are all too often destructive.

Thus the North Carolina Coastal Management Program was designed to reflect the essential characteristics of the natural system it protects. The program's basic framework, the Coastal Area Management Act of 1974, is based on the principle that it is necessary to strike a balance between the use and preservation of coastal resources if the state is to provide for both public and private interests in the coast. Its three primary elements — land use planning, permitting of development in areas of environmental concern, and preservation of natural areas for research, study, and public use — are woven together so that the resources are managed comprehensively. This makes it possible to anticipate, for example, how dredging an estuarine area will affect the shellfish population, and so steps can be taken to assure that there is little or no damage to the shellfish and the estuarine system.

Not only does this management approach recognize the connections within the natural system, it adjusts readily to change, enabling coastal concerns to be addressed and resolved as they

emerge. Just as the coastal environment is complicated and ever-changing, the coastal management program has been able to grow and adapt successfully, responding to the unique problems presented by people living in the coastal area.

Who We Are

To develop the policies and standards of the coastal program, the Coastal Area Management Act established the Coastal Resources Commission and the Coastal Resources Advisory Council. Their staff is the Division of Coastal Management, in the North Carolina Department of Natural Resources and Community Development. Local governments in the twenty coastal counties covered by CAMA play a key role in the coastal program as well.

The Coastal Resources Commission is composed of fifteen citizens, appointed by the governor, who represent a wide range of coastal interest groups, from the fishing industry to land development to agriculture. The commission determines the direction of the coastal program, setting the general policy goals and specific regulatory standards which address the needs of the coastal area and its residents.

The CRC receives information and ideas throughout the decisionmaking process from its primary link to coastal residents, the Coastal Resources Advisory Council. The 47-member council, with representatives of local governments, the marine science community, and government agencies, advises the commission on coastal concerns.

Carrying out the policies and standards of the coastal management program is the responsibility of the Division of Coastal Management. The coastal management staff works with local

governments to prepare land use plans, issues permits for development in areas of environmental concern, and administers the Public Beach Access and North Carolina National Estuarine Sanctuary programs.

The program is a partnership of state and local governments, for it relies on a cooperative effort between the two to be effective. Local towns and counties prepare land use plans, establish public beach access sites, issue permits for minor development in areas of environmental concern, and provide a constant exchange of ideas which is necessary for a strong, progressive management program.

The North Carolina Coastal Management Program itself is part of the federal Coastal Zone Management Program. Created by the Coastal Zone Management Act of 1972, it has provided funds to the state for resource management and ensures that federal activities in North Carolina's coastal area will be consistent with state and local policies.

What We Do

The work of the Coastal Resources Commission, Coastal Resources Advisory Council, and the Division of Coastal Management is often described as "protecting North Carolina's coastal area." Although accurate, this phrase does not illustrate the variety of activities which result in the coast's protection. What the commission, advisory council, and staff actually do is work with local officials, property owners, and interest groups to balance the needs for economic growth and resource preservation.

The framework for achieving such a balance was created by the structure of the coastal management program itself, through its complementary elements of land use planning, regulating development, and protecting significant natural areas. The balance is maintained by making continuous adjustments — revising, refining, and updating established policies; investigating, defining, and creating new ones — while carrying out the day-to-day activities of the program. Thus the coastal program responds to demands on the natural resources, through time and every day.

Throughout the year the overall balancing process is guided by the Coastal Resources Commission and the Coastal Resources Advisory Council. Meeting every two months at the coast, the commission studies upcoming issues, deals with current problems, reviews existing policies, and decides contested cases (such as an appeal of a permit decision).

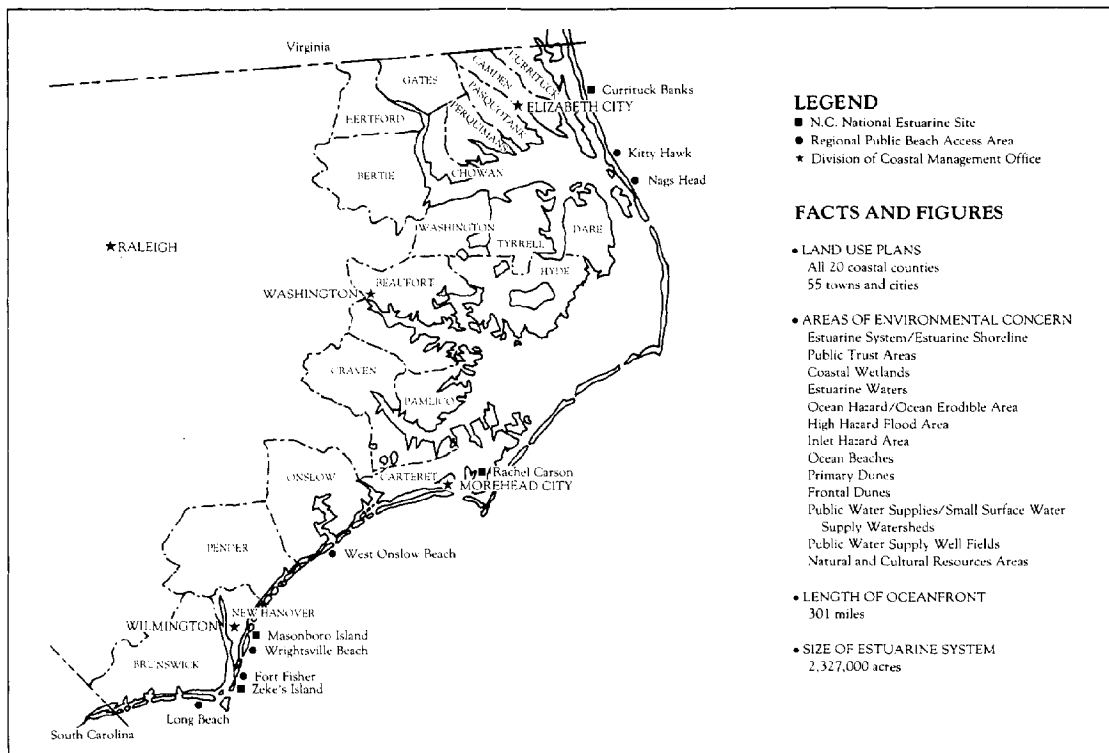
Intense discussion — by the commission, advisory council, staff, and local citizens alike — marks the decisionmaking process. Once an issue is introduced it is studied and debated thoroughly. Draft standards and policies to deal with the issues are scrutinized before a public hearing is held to receive comments on them. Only after considering all the concerns raised at the public hearing will the commission approve the new guidelines.

Over time this decisionmaking process adapts the coastal program to the changing needs of the coastal area. Sometimes the commission's actions are fine-tuning an existing policy; other times a completely new approach to a problem is required.

The program's approach to managing ocean-front development, for example, was initially established by designating hazardous oceanfront systems as one of the "areas of environmental concern," the lands and waters identified by the commission as requiring permits for development. From a foundation of basic management



policies and standards, the commission developed methods to address a variety of problems. Density of construction near inlets was limited to reduce the risks to life and property and guidelines for preparing pre- and post-storm disaster plans were adopted. More sophisticated



"oceanfront setbacks," one for small buildings and one for large structures such as motels and condominiums, were established. Most recently, erosion protection guidelines were revised to better balance the needs for the public's right to use its beach and an individual's right to protect his property.

This long-term process of creating and maintaining a management program with built-in balancing mechanisms makes it possible for the Division of Coastal Management to resolve resource conflicts every day. Assisting local governments with land use plan amendments and updates, meeting with landowners to discuss potential development projects, allocating funds for communities to construct beach access facilities, writing technical reports for the Coastal Resources Commission to use as it considers new standards, checking development sites for potential violations of the program's regulations, and deciding whether or not to issue a permit are just a few of the activities which carry out the basic elements of the coastal program daily.

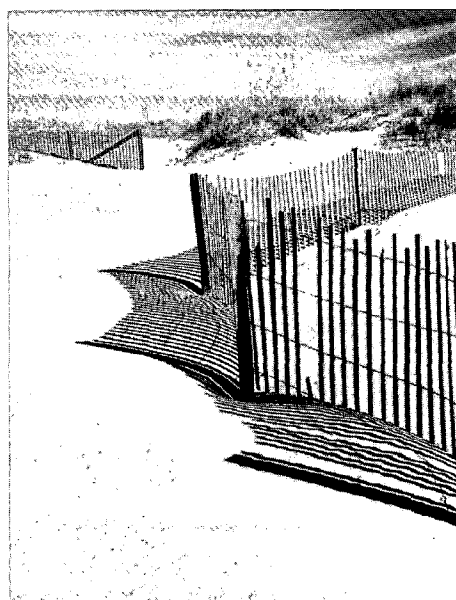
The interlocking elements each have a different role to play in balancing the use of coastal resources. Land use planning, for instance, lays the groundwork for both long-range resource use and daily decisions about where homes and shopping centers can best be located, and which areas need to be left in their natural state.

Issuing permits for development in areas of environmental concern is the primary mechanism in the program which maintains the equilibrium between resource use and preservation. The permits, required for development in the estuarine system, ocean hazard, public water supply, and natural and cultural resource areas of environmental concern, are only granted if a project meets the standards set by the Coastal Resources Commission. Frequently a permit will include specific conditions to ensure that the resources being used will be damaged as little as possible.

Natural area preservation, through the Public Beach Access and North Carolina National Estuarine Sanctuary programs, ensures that significant areas will be protected for the use of the public. The beach access program has established more than 350 sites along the coast where people can get to the beach without crossing private property. The estuarine sanctuary system provides a natural outdoor laboratory where students, scientists, and the public can come to study, do research, or bird watch and fish.

The essays and commentaries which follow discuss the various aspects of the North Carolina Coastal Management Program in detail. This brief description is only of the program's basic structure — the rest of the book will explain how the program works and how it can improve.

REFLECTIONS



Protection, Preservation, and Orderly Development

by David Stick



As the first licensed real estate broker on the Outer Banks I became involved in development activity in an era when choice property was selling for less than a hundred dollars an acre and the typical lot was laid off in a 50-by-100 rectangle. Property owners were being lured into the real estate business with the realization that a single small lot, accessible only by a sandy trail and marked with wooden stakes, could be sold for considerably more than the price of an acre of raw land.

It made no difference that the great majority of people engaged in the business of subdividing and selling land along the coast had absolutely no experience in real estate development. All it took then to qualify as a "land developer" was the ownership of some property and a few dollars to pay an itinerant surveyor to lay out the lots and draw up a plat. There were no regulations to be followed, no codes to adhere to, no permits to secure, and no ordinances controlling development activity.

In time some of us began to wonder about the long-range results of such haphazard development, but these concerns were not generally shared by others in the business, or even by the bankers, surveyors, or lawyers most closely involved with it. And in retrospect I realize that my own concerns as a real estate broker dealt for the most part with such matters as aesthetics and ethics — with the unsightly mess we seemed to be creating, and with the increasingly unflattering public image associated with people in our business.

I did not begin to have an awareness of the extent of the problems that could result from uncoordinated development until the late 1950s and early 1960s when I served as chairman of the Dare County Board of Commissioners. Increasingly the board found itself in the position of having to find solutions — and money to pay for them — on a wide range of pressing matters resulting from the hands-off-development and the let's-get-more-property-on-the-tax-books policies of preceding boards.

David Stick is a historian and author of several books on coastal North Carolina. He was a local government official and chairman of the Coastal Resources Commission from 1975 to 1977.

Who would have thought, back in the 1930s when Miss Mag Tillett was picking up garbage from Nags Head cottages to feed her hogs, that twenty-five years later a major item in the county budget would be garbage collection and disposal; or that a person would someday find out that he was pumping his drinking water from a shallow well located in his next-door neighbor's septic tank field. It was beginning to dawn on us that instead of decreasing the tax burden, the rapid growth we had been experiencing seemed to call for even more taxes to finance a wide array of new and expanded services.

We considered ourselves fortunate in having a new state-built by-pass of our beach road, and some bragged at having been able to force the land-grabbing highway people to cut the right-of-way from two hundred feet to one hundred and fifty feet. But today that fifteen-mile stretch is a traffic-clogged monster, and the time has long passed when it would have been feasible to acquire land for construction of a new by-pass to by-pass the by-pass. And I find it almost inconceivable that the current board of commissioners has found it necessary to spend annually the equivalent of our entire 1960 budget for an item none of us back then had even thought about — emergency medical services.

A quarter of a century ago matters dealing with the environment never appeared on our meeting agenda, and the word "ecology" might as well have been written in an alien tongue. Of course it was obvious that cutting down a forest resulted in destruction of the trees, and that leveling an oceanfront sand dune left the property vulnerable to the ravages of the sea. But like other county commissioners throughout the coastal area I had no knowledge of the long-range effect of dredging up marshland and converting it into finger canals and building sites; and I suppose we all shared the feeling that no action by a single individual or developer could possibly have an appreciable effect on the so-called balance of nature.

It was not until the late 1960s, as the environmental movement gained momentum, that I began to realize that the aggregate of what a lot of us were doing could in time blight the land and destroy forever the very things that attracted so many of us to the coast in the first place. By the time the term "coastal zone management" was coming into use I had become, without realizing it, a prime candidate for conversion.

My direct involvement with CAMA began with service on Tom Linton's so-called blue-

ribbon committee, putting together a draft of what eventually became our Coastal Area Management Act. As the only member of the committee with experience both as a coastal county commissioner and as a coastal land developer I was at times uncomfortable surrounded by scientists, land use planners, lawyers, and assorted government technicians. And I am sure other Linton committee members tired of my repetitious insistence that a coastal zone management program could not possibly work in North Carolina unless local governments were given a large share of the responsibility and authority. The primary concession to this view was in changing the composition of the advisory council from a strictly technical body to one having representation from all twenty coastal counties and a number of coastal municipalities.

The dismal record of most local governments with regard to environmental issues and the unconcerned approach of most land developers plagued me throughout the period in which I served as a member of the Coastal Resources Commission, and as its vice-chairman and chairman. Some of the academic types serving as technical consultants could see little justification in going out of our way to inform, advise, and involve local officials and property owners, especially those who were publicly and



abrasively antagonistic toward any action that would restrict the rights of individual property owners to do what they wanted with their own land. Nor could those representing development interests see any valid reason for paying attention to the equally abrasive and antagonistic advocates of conservation and preservation.

I suppose most environmentalists thought of me as a developer, and the developers considered me just another environmentalist. But this was the way I liked it, for I was convinced that CAMA could and should lead down a middle road between the two extremes, with ample room for both a balanced program of responsible development activity, and reasonable conservation. Though few seemed to take it into consideration, a basic goal of CAMA, clearly stated in the preamble to the legislation, was to establish a comprehensive plan for the *protection, preservation, orderly development, and management* of the coastal area of North Carolina.

Looking back over the first decade under CAMA I feel a sense of frustration and disappointment that the effort to have local officials and local citizens prepare their own land use

plans — with the assistance of professionals — was so often thwarted by planners accustomed to doing the whole job themselves. I was aware then, and still am, that we did a poor job of bringing the resident population into the initial process of identifying specific environmentally sensitive areas and devising regulations and procedures for development activity within such areas. And despite efforts at simplification, the CAMA permit process is still one viewed with trepidation and fear by most prospective applicants.

But I am proud to have been a part of the largest coordinated land use planning effort ever undertaken in this country. I share with others a feeling of satisfaction that our state was one of the first to designate its areas of environmental concern, and bring local governments into the permitting process. And I am convinced that CAMA has resulted in thousands of local officials and developers — as well as assorted lawyers, bankers, contractors, and citizens throughout the coastal area — taking a hard look, often for the very first time, at the long-range effects of current actions; and understanding that the lasting economic well-being of our coastal and estuarine region is to a large degree dependent on the protection and wise use of our limited natural resources.



The Legislative Connection

by Milton S. Heath

CAMA has been intimately tied to legislative processes since a 1969 legislative study resolution directed the Commissioner of Commercial and Sports Fisheries (then Thomas Linton) to develop and recommend a "comprehensive and enforceable plan for the coastal zone of North Carolina."

In response to this direction, Commissioner Linton designated a blue-ribbon study group to sift through a number of pending proposals on coastal zone plans. The blue ribbon committee, operating in the manner of a legislative study commission, produced the earliest formal draft of a coastal area management bill. When a modified version of this bill almost ran aground of opposition that surfaced at public hearings during the 1973 General Assembly, it fell the lot of an interim joint legislative committee to pick up the pieces. The joint committee, co-chaired by Senator Staton and Representative Whichard, drew on the criticisms voiced at the 1973 public hearings as the inspiration to reshape the bill with more local input.

The changes made by the joint committee, and more that were to follow in the same vein, produced the Coastal Area Management Act that the 1974 General Assembly finally enacted after intensive debates. The agenda of every subsequent legislature has included significant issues involving CAMA. (See table, "Highlights of Post-1974 Legislative Developments.")

CAMA's legislative evolution is dotted with recurring themes. I single out three of these for comment here; they will be very familiar to some readers.

The Balance of Local Interests and Statewide or Regional Interests

In its embryonic phase CAMA evolved, out of political necessity, from a Raleigh-

dominated proposal with a token local advisory role to a law that embodied a complex mixture of state and local participation. That shared state-local role ran the gamut of planning, regulation, enforcement, administration, and finance. At each stage local governments could elect at least to participate and in some cases to be the dominant actor. The compromise of state-local concerns that was forged by the 1974 General Assembly hardly pleased everyone, but it (and its federal counterpart) have provided a durable and pragmatic framework for intergovernmental cooperation that has withstood the test of time.

Since 1974 some proposals to revamp this state-local balance have surfaced in the General Assembly, but none has been enacted. For example, bills to enlarge the CRC to include much larger local government representation (by Senator Daniels) and to give the locally-dominated CRAC voting rights on the CRC (by Representative James), have died in committee. Some changes were made in the method of selection of commission and advisory council numbers in 1983, but they did not alter the 1974 compromise in any fundamental way. Currently, the drying up of federal coastal planning funds that were passed through by the state to localities is testing the depth of local support for CAMA. It remains to be seen how this will affect CAMA's continued viability.

Permit Coordination and Simplification

The drive to simplify and coordinate permits is another persistent trend in CAMA's legislative history. The original act held out the promise of streamlining permit systems as one of its principal selling points for developer support. Some of this promise has been realized.

Studies of permit streamlining were conducted on schedule as directed by the original act. Amendments to CAMA have eliminated some overlapping permits, as in the 1979 repeal of the sand dune permits and the merging of dredge and fill permits with CAMA permits. Average permit processing time has been re-

Milton S. Heath is a professor at the University of North Carolina Institute of Government. He was a principal draftsman of CAMA and is a member of the Coastal Resources Advisory Council.

Highlights of Post-1974 Legislative Developments

- 1975 • "Stretch-out" of CAMA compliance schedule.
- 1977 • Bill to repeal CAMA (not enacted).
• Bill to update CAMA in light of three years' experience (not enacted).
• Bill to apply CAMA's land classification system statewide (not enacted).
- 1979 • Repeal of the Sand Dune Law and CRC review of pesticide permits.
• Transfer of Dredge and Fill permits to CRC.
• Easing of easement-to-fill requirements.
• Delegation to staff of initial CAMA permit decisions.
• NRCD study of "regulatory takings" under CAMA.
• Marine Science Council study of coastal erosion.
- 1981 • Enactment and funding of a program to stimulate public acquisition of lands for better public access to beaches.
• Study of CAMA by the Legislative Committee on Agency Review (in lieu of Sunset Law study).
• Repeal of CAMA provision that would have terminated CAMA automatically in 1983.
• Study of CAMA by the Legislative Research Commission.
- 1983 • First major overhaul of CAMA by amendments recommended in the studies directed by the 1981 legislature. This legislative overhaul included changes in CAMA permit procedures, permit fees, civil penalties, definitions, selection of CRC and CRAC members, and tax credits for donation of beach access lands. Set aside for more study were peat mining, large-scale coastal land clearing, and water pollution affecting coastal rivers.

For references to bills and acts, see Popular Government, Spring 1980, pp. 32-37, 44; N.C. Legislation 1983, pp. 173-176, Institute of Government.

duced enough to allow amendments in 1983 that cut the maximum statutory period for permit processing. Other 1983 amendments also simplified permit procedures for emergency work and for developments that can be handled under blanket permits because of their minimal environmental effects.

A developer can find in a CAMA field officer or local building inspector a contact point for all or most permit processing. Consistency of federal activities with state permits is

promoted by one of the CAMA procedures, and the administration of some Corps of Engineers regulations in the coastal area has been effectively delegated to the Coastal Resources Commission in recognition of the strength of the CAMA program.

If the ultimate hope of a single permit for development in the coastal area has not been (and may never be) realized, there nevertheless has been some real progress toward CAMA's goals of simplifying and better coordinating permits through a combination of continued legislative and executive attention.

Experiment, Demonstration, or Fixture?

Many CAMA supporters early on viewed CAMA (in combination with the Land Policy Act of 1974) as the model for similar land use regulation in the mountain and piedmont areas. As time passed resistance to further regulation grew, the prospect of a mountain area management act faded, and the Land Policy Act was stripped of its enforcement machinery in 1979. Although the 1983 General Assembly enacted a Mountain Ridge Protection Act, this law bore little resemblance to CAMA in its origins, its scope, or its regulatory approach. In a five-year progress report on CAMA I observed that "CAMA has not been accepted as a model for land use management in other parts of the state." There is little reason to change this conclusion at this time.

On the other hand, CAMA has grown in acceptance for its own sake in the coastal area and elsewhere. During the late 1970s an anxious scenario was reenacted by CAMA supporters before every legislative session: Should they risk seeking needed amendments to CAMA or should they back off for fear that any bill to amend CAMA could become a vehicle for weakening or replacing the act? The counsel of caution usually prevailed and needed amendments were often shelved or shorn for another biennium. In the months leading up to the 1983 legislature, however, caution was thrown to the winds and legislative study commissions were encouraged to consider the first substantial overhaul of CAMA since its enactment. As noted earlier, most of the proposed reforms were enacted and CAMA's state budget was substantially increased to help make up for lost federal funds.

Little is certain in politics but, for now, CAMA appears to be solidly in place as a system of managing coastal land use, even if it has not become the blueprint for other areas of the state that was once anticipated.

Laying the Groundwork

by Karen E. Gottovi

A land use plan reflects the desires and objectives of the political leaders and citizens of a community and translates them into land use patterns. It provides guidance to government officials as they consider and prepare capital improvement programs and investments, zoning maps and text amendments, subdivision proposals and ordinances, and special area development plans and projects.

Citizens and private organizations within the community can use this statement of local government land use policy in designing development proposals and in responding to matters under consideration by the governing boards, as any land use decision should reflect the policies expressed in the plan. Regional, state, and federal agencies which provide facilities or services in the planning areas also should use the land use plan as a guide in siting these facilities.

Land use planning is the most important function which local government undertakes. It is also the most difficult, because of pressures brought upon the elected officials by those promoting or opposing development, and the lack of accurate, scientific information available about the probable effects of a land use change. The long-term im-

pacts of development affect the community well after the elected officials leave their positions, in such ways as resource protection, degradation or loss, service needs, and tax decreases or increases. The community, of course, bears these costs, or reaps the benefits.

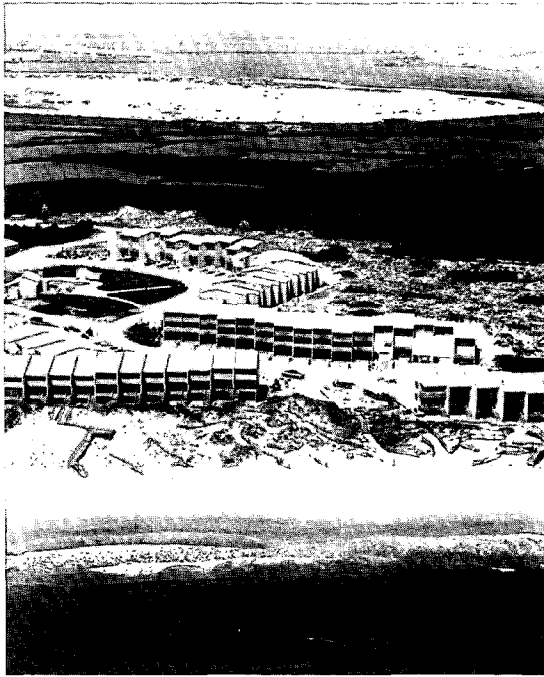
Land use planning is particularly important in the coastal regions of the United States because eighty percent of the population lives within one hundred miles of the waters of the Atlantic Ocean, Pacific Ocean, Gulf of Mexico, or Great Lakes. Tremendous population pressures exist on these areas, and many sections of the coast have seen their resources degraded, their amenities disappear, and their taxes increase because they had not planned properly for the physical development of their communities.

The history of coastal land use planning in North Carolina goes back to 1972 when the federal government recognized the need for the protection of the coast, and enacted the Coastal Zone Management Program. It was designed to entice the thirty-six coastal states into doing land use planning and resource protection by awarding grants for these activities in both the planning and implementation stages.



North Carolina, after much debate, enacted its Coastal Area Management Act in 1974, and began the process of developing its coastal plan. The Coastal Resources Commission, a fifteen-member body chosen by the governor to set policy and make rules for the implementation of the act, started its deliberations with the aid of

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the Coastal Resources Advisory Council. A major factor in the passage of the act was the decision to have the twenty coastal counties do their own land use plans, and also to allow the cities in the region to participate if they desired to do so. It was a wise decision. Local governments are jealous of their right to make land use decisions for their communities, and would have strongly resisted regulations imposed from above. Instead, CAMA made them partners in the process and won their cooperation. At this point, all twenty counties and municipalities in coastal North Carolina have approved land use plans and are working on their second updates of these plans.

The state did, however, realize that some coastal resources are of more than local concern, and are important to the entire state. After many months of consideration by local governments, the Coastal Resources Commission and the advisory council named fifteen categories of resources in four broad groupings as areas of environmental concern. These have overriding land use regulations, and include estuarine systems, ocean hazard areas (beaches, inlet areas, and dunes), public water supplies, and natural and cultural resource areas.

Local land use plans are left to deal with problems of local concern which can be anticipated during the coming ten-year planning period. The community must prepare a data base which contains population trends, an analysis of current land uses, zoning ordinances and

other regulations, current land use problems, and projections of economic demands and future land use needs. The implications of these demands on the ability of local government to provide cost effective services such as water, sewer, fire and police protection, transportation, schools, parks, solid waste disposal, and public access to the ocean and estuaries must also be analyzed.

Local governments must consider constraints to development, such as the size of water and sewer treatment plants, and identify those areas that are fragile or contain resource potential, such as groundwater supplies, prime farmland, peat, or minerals. Seasonal population changes present unique problems to coastal counties and cities and must be addressed as well.

A community really needs to determine how much it wants to grow, and how that growth is going to affect its citizens in their quality of life and cost of living. Policy statements, carefully considered by the community and the local government, should give direction in the development of the land use plan, and should address the growth issue as it affects resource protection, resource production and management, economic and community development, continued public participation, and storm hazard mitigation. These policy statements must be consistent with each other in order to make any sense and offer guidance in the development of regulations to enforce them.

The benefits of the North Carolina Coastal Area Management Act are manifest in the land use plans prepared by the local governments. Without CAMA and the funds and expertise it has provided, most of the coastal counties would not have gone through this process. In the past, few of them had regulated growth in any significant way, because they did not have the trained personnel on their staffs to prepare the data, or the money to hire them. Citizens, in many cases for the first time, were given the opportunity to participate in the policy decisions, and they, as well as the elected officials, benefited from the massive educational effort that accompanied the land use planning process. In many communities, the development of land use plans became highly political, and some local elected officials gained or lost their seats on the governing board based on their support or nonsupport of various policies in the plans.

The outstanding fact to remember, however, is that these plans reflect the wishes of the

community. The plans state how the residents of an area want to see their city and county develop. If a hurricane should devastate their community, this is how they would like to see it rebuilt, so that a future disaster will not cause as much devastation. The plans are not written in stone; they may be amended to allow for changing conditions. But this is a thoughtful process which must be accompanied by public hearings and end with approval by the Coastal Resources Commission.

Any process has its pitfalls, however, and the land use planning process under CAMA is no exception. Elected officials are subject to the political process, and have sometimes succumbed to pressure, considering their reelection more important than resource protection. Fortunately, the electorate is becoming more aware and involved, and is more often than not exerting pressure to do the right thing, not the wrong. In some cases, governments have turned over in order to develop a land use plan pleasing to the citizens.

Another pitfall has been that while a plan's policies speak to resource protection and wise, orderly development, the local zoning and subdivision ordinances have not supported these policies, allowing "business as usual" to occur. CAMA staff are now in a position to encourage local governments to improve and, in some cases, institute new regulations to make them conform with their policies. Citizen groups, too, are becoming increasingly aware of inconsistencies in plans and forcing change where necessary. The Coastal Federation, League of Women Voters, Sierra Club, and Carteret County Crossroads, to name a few, are not shy about creating public concern over inadequate resource regulation.

The prognosis for North Carolina's coast is positive. While our coastal communities are developing rapidly with condominium resorts, we are somewhat behind other areas and still have some resources left to protect. Many of our barrier islands are in federal, state, and local public ownership and the four sites of the North Carolina National Estuarine Sanctuary will provide research opportunities for our universities and schools as well as additional resource protection. Offshore oil and gas development may provide both a crisis and an opportunity for regulated growth and additional financial resources to help mitigate its effects. Most important of all, CAMA has the political support of North Carolina's citizens and leaders. Both state and local governments, in partnership, endorse the program.





Balancing Conflicting Needs

by Arthur W. Cooper

Although it was never the central focus of CAMA, protection of natural areas was always considered as an important element of North Carolina's coastal management effort. The concept of resource preservation is prominently stated in CAMA's goals. In fact, G.S. 113A-102(b)(4)(v) specifically states one of CAMA's goals as establishment of policies, guidelines, and standards for "preservation and enhancement of the historic, cultural, and scientific aspects of the coastal area." In addition, several of CAMA's areas of environmental concern provide the authority to regulate development in natural areas so as to protect their ecological values.

Natural area protection was recognized in CAMA as being important for two reasons. First, such areas are frequently highly productive and thus may contribute directly to the functioning of coastal ecosystems. Salt marshes are excellent examples of such systems. Second, natural areas may contain species or combinations of species that are rare and of specific or historic importance. Thus an area may warrant preservation for its intrinsic values alone. Nags Head Woods and Jockey's Ridge are excellent examples of this latter category.

Several strategies have evolved through, or in association with, CAMA that promote natu-

ral area preservation. Through the local government planning process important natural areas can be identified and a rationale presented for their preservation. In many cases, the public participation process associated with land use planning provides a means for developing public support for protection of natural areas. Nags Head Woods, for example, has been identified by many scientists and lay persons as an area of major ecological significance. The Woods has been identified by the town government as an area worthy of preservation. Such support from local government has played an important role in the very successful efforts to preserve the Woods.

The process centering on designation of areas of environmental concern and regulation of development through permits is another technique by which natural areas can be protected. Extensive areas of regularly flooded salt marsh, for example, have been preserved by this technique. CAMA regulations for development in regularly flooded salt marsh emphasize that only low intensity uses compatible with perpetuation of the integrity of the marsh system will be permitted.

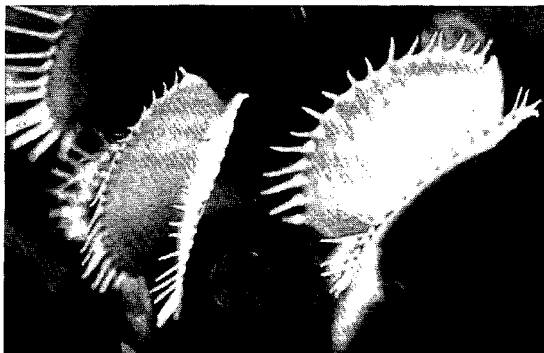
It is not likely, however, that reliance on the regulatory process alone will be the most effective means of protecting natural areas. In the first place, CAMA permits and area of environmental concern use regulations are designed to manage, not stop, development. Furthermore, because they affect private property rights, restraints on development enacted under CAMA must be tied to clear public purposes,

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such as maintenance of viable fish and shellfish populations and quality of public trust estuarine waters. For these reasons, regulation will always be a valuable tool for assisting in natural area protection, but it is unlikely that major natural areas of significant size will ever be preserved outright through its use.

Probably the most effective technique for protection of natural areas is acquisition of the property in question for the specific purpose of preserving it in perpetuity in an undeveloped state. In this way the natural values of the area are preserved and, when they so desire, owners of private property are compensated. Since the advent of CAMA, government agencies, private individuals, and national conservation organizations have preserved more than 100,000 acres of valuable North Carolina coastal natural areas.

The coastal management program itself has played a major role in preserving natural areas through participation in the National Oceanic



and Atmospheric Administration's National Estuarine Sanctuary Program. This program provides federal matching funds to acquire and preserve estuarine areas as natural field laboratories for scientists, students, and the general public. North Carolina's National Estuarine Sanctuary includes the 2,025-acre Rachel Carson Component near Beaufort, Zeke's Island south of Fort Fisher, a part of the Currituck Outer Banks, and Masonboro Island. These sanctuary sites support research in estuarine dynamics and the study of coastal ecosystems, as well as traditional uses of the areas involved such as hunting and fishing.

The Rachel Carson area, for example, lies across from downtown Beaufort and is a complex of islands, marshes, intertidal flats, and shallow water environments providing habitat for a great variety of animals, including brown pelicans, peregrine falcons, feral horses, and loggerhead turtles. The area is named, of course,

for the woman who, through her writings, played a major role in the 1960s in raising our national awareness of environmental issues.

The Nature Conservancy, a national land preservation organization, has been — with its North Carolina chapter — the major private organization involved in coastal land preservation. Since the early 1970s the Conservancy has participated in preserving twelve areas totalling nearly 200,000 acres in the twenty coastal counties.

The smallest of these, Jockey's Ridge (62 acres), is now a state park and is intensively used by hundreds of thousands of visitors to the Outer Banks every year. The largest area, 118,000 acres comprising more than half of the Dare County mainland, was donated with the assistance of the Conservancy to the U.S. Fish and Wildlife Service in early 1984. This site is a large, unbroken area of pocosin and constitutes a magnificent reserve of habitat for black bear, alligators, bald eagles, and other endangered species of plants and animals.

Other swamps, including the Green (13,850 acres) in Brunswick County, the Dismal (31,570 acres) in Camden, Gates, and Pasquotank counties, and the Chowan (10,844 acres) in Gates County constitute large reserves of habitat for coastal species. Conservancy acquisitions at Bald Head Island and Currituck Banks will form the focal point for development of estuarine sanctuaries in those areas, thus preserving valuable areas of true estuarine environment.

Nags Head Woods in Dare County is now the largest preserved tract of maritime hardwood forest on our coast. The Woods contain many tree species (beech, holly, hornbeam) not found elsewhere near the ocean, and provide shelter for a great variety of animals. The Conservancy has developed a center in the Woods which is open to visitors to the Outer Banks. The Conservancy's acquisitions have all been made either by purchase from a willing seller or by gift from donors. In this way, nearly 200,000 acres of priceless coastal habitat have been quietly and permanently preserved for future North Carolinians to enjoy.

Although significant acreages of natural areas have been preserved on the coast, there undoubtedly are other areas that deserve such permanent protection. In its role as the mediator of the balance between appropriate development and preservation of coastal resources, the North Carolina Coastal Management Program will continue to support and encourage protection of valuable natural areas.



You Can Get to the Coast, but Can You Get to the Beach?

by David Brower

The importance of the ocean beaches and sounds has been recognized for as long as humans have lived in coastal North Carolina. They provided nourishment from day to day and sustained life for the earliest coastal dwellers; later as human-kind became more organized the ocean beaches and sounds provided the means and the substance for commercial activity. Fish were harvested and preserved on the beaches and shipped from them by canoe, rafts, and later ships. It has only been in relatively recent years that the beaches have been used extensively for recreation.

The right of the public to use the ocean beaches and sounds has never been seriously questioned in North Carolina. The first inhabitants never even raised the question of ownership or right to use these areas upon which much of their livelihood depended. Later the English settlers brought with them English law, including the Public Trust Doctrine, which holds that the ocean beaches and sounds are owned by the state and held in trust for the use of its citizens. This law, which has been followed by the North Carolina courts and legislature, means that the ocean beaches and the sounds belong to all of the people of the state and can never be conveyed away; the citizens have the right to use these areas forever.

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For centuries this rule has been followed and the ocean beaches and sounds were used for subsistence and commerce with very little conflict or serious challenge. Those who sought to use these areas merely found a convenient way to approach them or made their way to them as best they could. For almost three hundred and seventy years after the founding of the first colony, access to the coastal waters was not a concern. People who wanted to get to the ocean beaches and sounds took the paths or cartways traditionally used over the years and were rarely, if ever, challenged. As late as 1970 there were only a few institutionalized means of gaining access, such as public roads and parks. The one major exception, of course, was the Cape Hatteras National Seashore. Thus for over three hundred and seventy years the question of how people could get to the ocean beaches and sounds they had the legal right to use simply never arose because it was not a problem.

About thirty years ago this situation started to change, slowly at first but gaining momentum every year. Buildings and no trespassing signs began to appear in areas used traditionally by people to get to the ocean beaches and sounds. At the same time more and more people were traveling to the coast, attracted by the magnificent sand beaches and pristine waters. More and more of these people chose to build at the coast. Those who built on waterfront land often blocked the access of those who did not

(as well as the access of the day visitor) and those who built away from the water generated more demand for ways to get to the beach and water.

Fortunately this problem was anticipated and dealt with before it assumed insurmountable proportions. In the early 1970s the University of North Carolina Sea Grant College Program encouraged several research efforts which defined the problem and explored alternative means of dealing with it. In addition, an inventory was prepared to determine the number, location, and approximate size of existing or potential accessways. From this foundation the Division of Coastal Management, the General Assembly, and the many cooperating units of local government have developed the North Carolina Public Beach Access Program which has been recognized as being one of the best and most creative in the country.

This is all the more remarkable because, even though the General Assembly has been generous with the program by North Carolina standards, when compared with some other states the appropriations have been miniscule. The basic philosophy of the program is one of state-local cooperation and "use what you already have in the very best way possible." The program has gone from only a handful of recognized public accessways to hundreds of neighborhood and regional ocean beach accessways and has recently been extended to the sounds. The program's four elements are described below.

Recognition of Existing Accessways

The inventory showed that there were a large number of dedicated but unimproved roads that ended at the ocean beach. Local governments were encouraged to identify these, to insure that they were in fact public, and then to mark them with uniform "Public Beach Access" signs made available to them by the Division of Coastal Management. This program served not only to make the accessways more visible and hence more usable, but also prevented them from getting "lost." (The inventory revealed that several dedicated accessways had been built on by adjacent landowners and that others had been withdrawn from public ownership.)

Improvement of Existing Accessways

The General Assembly has appropriated over \$1.2 million which has been used by local governments to improve existing accessways. These improvements have included parking areas, rest rooms, dune crossovers, life guard

stations, etc. These grants have been administered by the Division of Coastal Management which has also been successful in guiding local governments to other sources of funding.

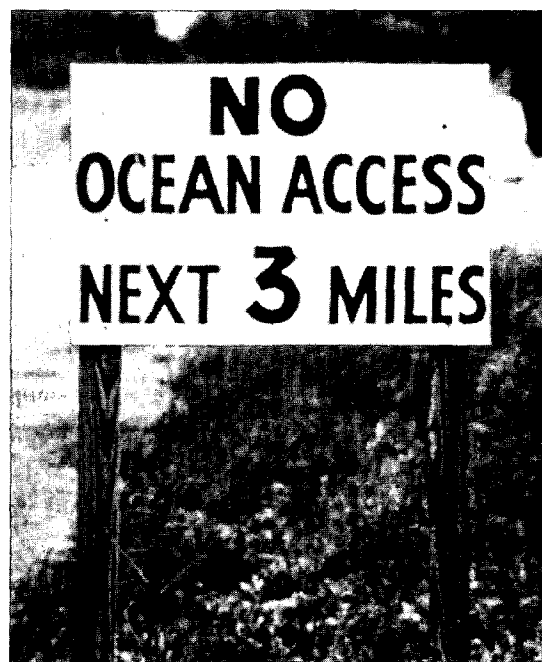
Acquisition of Additional Accessways

Using the funds provided by the legislature and other grants a number of local governments have acquired additional accessways. In some cases properties have been acquired through gift or bargain sale. This has been made even more attractive by recent legislation which permits special tax treatment of such situations by the donor.

Beach Access Planning

The Coastal Resources Commission requires that when local land use plans are updated every five years that a beach access plan must be included. Rather exacting standards for judging the completeness of these plans have been developed and thus at the end of the current updating cycle it is expected that each unit of local government which fronts on the ocean or the sound will have a beach or water access plan.

The conclusion, then, is a happy and optimistic one. A relatively small amount of money has been mixed with a great deal of creative energy and yielded a program which provides access to our ocean beaches and sounds, making these invaluable assets available to all of the people to whom they rightfully belong.



Expanding a Legacy of Interagency Cooperation

by Charles W. Hollis

Upon reflection on these ten years of CAMA and the involvement that the Corps of Engineers has had with its various programs, many names and faces come to mind that have made important contributions to the successes that have been achieved. Although the CAMA interface with all elements of the Corps of Engineers has been cordial and cooperative, there is clearly no aspect of the respective programs that has so strongly demonstrated a complete attitude of respect, cooperation, and mutual trust as within the regulatory programs. By way of introduction, it must be recognized that CAMA cannot take credit for beginning such close coordination, but can take full credit for recognizing and capitalizing on the strengths of programs that existed when the CAMA program began and for providing a framework within which dedicated personnel could further build and refine the procedures and policies in the future. The beginning of the building of our interagency bridges predates CAMA by a few years and has its roots in the "Dredge and Fill Program."

In the late 1960s, the legislature of the state of North Carolina responded to a growing public concern for the loss of coastal marshlands to development by enacting the so-called "Dredge and Fill Law." This action coincided with the rising national interest in coastal wetlands as reflected in a series of major court decisions affecting the seventy-year-old Corps of Engineers' regulatory program. By 1970, the North



Carolina Division of Marine Fisheries (the state agency responsible for implementing the Dredge and Fill Law) and the Corps of Engineers each found themselves with significant new responsibilities of regulating activities in coastal North Carolina in the face of growing pressures for economic development of the same areas for industry and housing.

Each agency was generally understaffed and often could only fight the "fires" of the more significant projects up and down the coast. From these small staffs at both state and federal levels there began, perhaps out of necessity, a growing practice of coordination and cooperation so as to avoid inconsistencies in dealing with the public and to provide as quick a response to the public as possible. The Division of Marine Fisheries had a widely dispersed cadre of enforcement personnel throughout the coast which, although regularly engaged in enforcing fishing regulations, was soon made familiar with state and Corps permit regulations and became a virtual army of eyes and ears and public contact for the programs.

These personnel were incorporated into a monthly enforcement conference held by the Corps beginning in early 1972. It was regularly attended by essentially all state and federal agencies involved in the coastal permit programs. Such early inclusion of these and others into an interagency team of professional people with a genuine interest in the coast, its people, and its natural resources may well have laid the groundwork for some of the success of North Carolina's coastal management program. This team

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approach led to joint application forms and close permit processing coordination as well as joint efforts in the task of enforcement. Born out of these times of respective need were procedures, policies, and program direction that have struggled and matured to become today's national models of interagency coordination and cooperation.

The Corps participated in the legislative hearings on the proposed Coastal Area Management Act and offered suggestions for structuring the regulatory program under CAMA. After the passage of the act in 1974, the Corps began to regularly attend and support the Coastal Resources Commission meetings and to participate in any way that was appropriate.

In the same spirit of cooperation that had its beginning in the Dredge and Fill Program, there was, from the beginning of CAMA, a day-to-day close relationship between the respective regulatory staffs. Each program had its strengths and weaknesses and each could draw upon the other to maintain an effective and consistent coastal regulatory network. With active dialogue at all staff levels and mutual goals to work out problems and provide a meaningful and respected program for the public, there emerged an important element of professional pride throughout the state-federal team to a degree that no member would settle for less than the best coordinated program in the nation.

The state and federal staff leadership soon found itself being called upon to speak at regional and national conferences and workshops to explain how such diverse agencies could work in such close harmony on programs that inherently were so competitive. It continues to be difficult for outsiders to commit to begin to build bridges of trust and cooperation between

agencies when they recognize that what North Carolina has is a product of ten to fifteen years of relentless attention to building and repairing those bridges.

The strength of North Carolina's CAMA in all of its facets is its people. The early legislators, the department leaders, and the staff from Raleigh to the field was made up of key individuals who were "right for the time." CAMA calls for a dynamic program that changes with the pressures on the coastal resources and with the people it serves. Many of the early leaders of CAMA who made contributions to move the program ahead would not fit today's problems as well. Various state administrations have raised up their own leaders who made their own unique contributions and passed the program on to their successors. Significantly, each department leader has had an apparent deep-seated belief in CAMA and has worked hard for its success and provided a melting pot of influence which has combined to strengthen CAMA over the years.

At the staff level, there has been a contrasting continuity of personnel in many positions. A few of the staffers go back to the old dredge and fill days and, combined with those Corps staffers in the same category, these make up the "old guard" that keeps the new people pointed in the established direction of good program management and good service to the public.

Those of us in the Wilmington District Corps of Engineers are proud of North Carolina's CAMA programs and its people and are pleased to be a part of the team. We look forward to the next ten years of public service together.

Living with Coastal Hazards

by Orrin H. Pilkey

The great Spanish explorer Hernando De Soto's trip down the Mississippi River in the early days of North American exploration occurred during a great flood. In his writings, De Soto marveled at the awesome natural beauty of the event. Two hundred years later, floods on the Mississippi were no longer beautiful; they became tragedies causing much destruction and loss of life.

Coastal areas are like rivers. They are subject to very powerful forces of nature which can occur suddenly and catch people by surprise. However, the natural coastal barrier island responds quite flexibly and predictably to nature's surprises, be it sea level rise or massive hurricane. Just like floods on the Mississippi River, natural events in the coastal zone become hazards only when man gets in the way.

The early settlers on the Outer Banks of North Carolina were seldom adversely affected by coastal hazards, because they chose homesites, built structures, and carried out lifestyles specifically designed to minimize the hazards of barrier island living. Not so today's property owners. The North Carolina coastal environment, like the rest of the U.S. coast, is becoming increasingly hazardous. More and more people are living closer and closer to the sea.

On islands where people live, there are two types of hazards, natural and manmade. The wise coastal dweller will learn to recognize these hazards and take action accordingly.

Natural Factors

Shoreline erosion is probably the most widely recognized hazard on North Carolina's

barrier islands. Commonly the rates of erosion on the U.S. Atlantic barrier island coast are of the order of two feet per year and North Carolina is typical in this regard. Erosion is often accomplished during storms, but it would be a mistake to consider it a strictly storm-related phenomenon.

The principal cause of North Carolina's erosion problem is a slowly rising sea level; the rate is perhaps one to one-and-a-half feet per century. Most scientists agree that this rate will accelerate in coming decades and so will the rate of shoreline erosion. Because the North Carolina coastline is situated on a very flat coastal plain, a small sea level rise causes a high rate of shoreline erosion.

Most of our islands are eroding on both sides. For example, Shackleford Banks, an undeveloped island, is eroding three to six feet per year on the ocean side and probably at twice that rate on the sound side.

Erosion takes many forms and scientists don't completely understand the problem. For example, erosion at Nags Head has been more or less a steady three to six feet per year for the last century. On Bogue Banks, however, the rate of erosion seems to have greatly accelerated over the last two years and, in some sections, the dune line has moved back tens of feet seemingly overnight. The only large section of North Carolina's barrier shoreline which is not retreating is Sunset Beach. Instead, it is slowly (and temporarily) building seaward.

Erosion is usually termed shoreline retreat by coastal geologists. It does not damage beaches in any way. It only causes them to change their location in space.

In contrast to shoreline erosion, which often is a gradual and continuing process, **storms** are

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catastrophic and short-lived. A number of events (including erosion) may occur during storms, all of which are hazardous to island inhabitants.

Overwash occurs when waves from the ocean side of the island rush between dunes, often bringing along beach sand. All North Carolinians are familiar with the problems of Highway 12 on the Outer Banks. With increasing frequency, state newspaper accounts tell of overwash during winter storms temporarily closing the road. This creates an **evacuation** hazard.

Flooding of islands during big storms is caused by so-called **storm surges** which occur when storms push huge masses of water ashore and actually cause sea level to temporarily rise as much as ten feet and even more. Hurricane Camille, the "Big One," may have raised sea level thirty feet along a portion of the Mississippi shore. On top of raised sea level are waves which add to the woes of people living on islands. Flooding may also occur from water pushed on into the lagoons behind islands. Past storms in North Carolina have pushed large amounts of water through inlets and into the sounds and estuaries. When the winds change direction, this water sometimes comes back all at once. Not only can communities be flooded, but this is when the new inlets are cut through North Carolina's islands.

Inlet formation is most likely to occur on low narrow stretches of barrier islands. Hurricane Hazel in 1954 produced two new inlets through Emerald Isle on Bogue Banks. According to David Stick, more than twenty inlets have opened and closed during historic time on the Outer Banks. The great Ash Wednesday storm of 1962 almost formed an inlet on the narrow stretch of island just north of Cape Hatteras and in the same storm Oregon Inlet was widened from one-half mile to two miles in a matter of hours.

After inlets are formed, they tend to be very mobile features. Rates of shoreline changes near inlets are higher than anywhere else on barrier islands due either to **inlet migration** or **inlet blowout**. Each inlet is different. For example, Tubbs Inlet and New Topsail Inlet have a tendency to migrate to the south. Beaufort and Bogue inlets have more or less stayed in place, but they tend to change their size during storms. For over one hundred years Oregon Inlet has migrated to the south at seventy-five feet per year and, at the same time, it blows wide open during storms.

A modicum of common sense will go a long way in avoiding all of the above-mentioned natural hazards. The most important single safety factor is elevation. The possibility of flooding,





overwash, and inlet formation are all minimized by choosing sites at high elevations. Even more desirable is an island that is both high and wide such as parts of Bogue Banks. Siting a building behind rows of dunes will also reduce overwash risk and, needless to say, the further back from the shoreline, the longer the time before erosion catches up. Looking at the soil can tell you some important things. If the soil contains shells of the same color and type as those on the nearby beach, watch out! The site is probably subject to overwash. Last, but not least, living in a maritime forest is safer in terms of protection from wind damage than living in open dune areas. In a big storm, a tree or two may fall and knock holes in the roof, but in exposed areas, even well-built houses may be destroyed.

"Manmade" Hazards

Man does a lot of things to barrier islands to increase the natural hazards. For example, **removal of sand dunes** reduces both elevation and the overwash battering effect of dunes and may increase the shoreline erosion rate. **Vegetation removal**, especially in forests, may be the cause of increased wind damage in the next storm, or it may start sand dunes moving again as happened in Emerald Isle and in Nags Head. **Road placement** is important. Roads that are cut through the dunes, straight to the beach will act as passages for storm overwash. Better to go over, not through dunes and better to have curvy roads. **Salt marsh filling**, which is now illegal in North Carolina, has made more land area for development, but such areas are usually

low in elevation and the underlying buried mud often causes septic tank failures. **Finger canals** cut into the backside of barrier islands may be sources of pollution and bad odors. Such canals tend to destroy the local fresh water supply. On some narrow islands, finger canals could become inlet sites in the next storm.

Perhaps the most serious, yet least understood man-caused hazard is related to **shoreline stabilization**. Inevitably and understandably, when buildings are threatened with falling into the sea owners wish to protect their investment. Any means of halting shoreline retreat is called shoreline stabilization. When structural stabilization is used (for example, construction of a groin or seawall) short-term protection is furnished for shorefront buildings. But evidence from New Jersey and other states with more highly developed shorelines indicates that structures destroy beaches in the long run and actually increase the energy of the waves striking the shoreline. Damage from a major storm can actually be increased because of the presence of long-installed seawalls.

The list of manmade hazards would not be complete without mentioning **quality of building construction**. Buildings on barrier islands are subjected to hazards such as high winds and flooding which are less important factors for construction in most inland localities. There are good building codes in effect for most of North Carolina's coastal communities, but these are not always enforced to the hilt. Furthermore, in many beachfront communities there are older buildings put up before building codes were in effect.

The principle of construction that must be followed in hurricane-prone areas is **continuity**. Each component of the house must be attached well to other components. Cost of hurricane-resistant construction adds about ten percent to the cost of framing a typical beach cottage.

Inferior construction is not only a hazard to an individual building. When roofs and walls begin breaking off in winds or floating away in rising waters, nearby houses are frequently damaged and even destroyed. A single poorly built house can be like the proverbial rotten apple in a barrel; a chain reaction can start and an entire community may suffer damage plus loss of life.

The "Solution"

Know your site. Know your building. Know your evacuation route. Know the hazards you are likely to face in a storm and act in accordance.



In order to address the coastal hazards which Dr. Pilkey describes, the Coastal Resources Commission has developed, through seven years of study and public discussion, a comprehensive program to manage oceanfront development. The program integrates oceanfront setbacks for small and large structures, density controls for construction near inlets, limits on public investments in hazard areas, dune protection standards, pre- and post-storm disaster planning, and erosion protection guidelines which prevent the use of erosion devices (such as seawalls) which would damage the public beach.

We asked Dr. Pilkey to comment on the management of oceanfront development in North Carolina. His observations are below.

DCM: What is the value of an integrated oceanfront management program?

OHP: North Carolina's barrier islands are complex, integrated natural systems, so we must use a comprehensive approach to living with those systems. For example, what a community or individual does at one end of an island may impact a community or individual miles away. Similarly, but on a different scale, people who live right on the beachfront can impact those



who are two or three blocks behind them, depending on how and where they construct their home. An integrated approach is essential to dealing with all the variables involved in coastal development.

DCM: Why is it important to view the public beach as a common resource in developing an oceanfront management program?

OHP: The beach is a precious and rapidly diminishing natural resource which belongs to all the people of North Carolina. However, a relatively small group of people own property along the beaches, especially if they are considered in relation to the millions of residents of this state. Hardening the shoreline, through seawalls and the like, protects only the private property behind the structure, while destroying the public beach. If we keep in mind that the beach belongs to us all, then the methods that we will use to respond to erosion problems — such as the policy established by the CRC — will protect the private landowner's interest and preserve the public beach.

I think our beaches should be viewed as national parks: never should the hand of man be allowed to alter them more than to build a sandcastle.

DCM: You have observed the coastal management program — and the evolution of the oceanfront development policy — since it began. As a long-time critic of the program, how successful do you think it has been in reducing the risks of life and property inherent in building along the coast of North Carolina?

OHP: It depends on whether or not we are talking about the program in a relative or absolute sense. In comparison to other states, North Carolina is outstanding. In fact, we have to go to Massachusetts or Maine to find a state with a coastal program as forward-looking as this one. In particular, the recent regulation forbidding hard stabilization of the shoreline is the model for other states. It is now clear that seawalls destroy our beaches and, since beaches are a vanishing resource, many states would like to develop ways to protect their beaches much as we have.

Still, I see more and more multi-family buildings along the beaches. They may be built behind the required setback, but with sea level

rising at such an accelerated rate, we have a real problem. By the end of the decade there will be hundreds of buildings threatened by erosion to the point of falling in the ocean. We've got a tremendous problem on our hands — all the coastal states do — which must be addressed.

DCM: You once urged the CRC to continue exploring new ways to deal with oceanfront hazards. What areas of activity would you recommend the commission become involved with in the coming years?

OHP: It's time that we begin planning our retreat from the shoreline. When we declare that hard stabilization is no longer legal, as the CRC has done, then we begin the process. This may strike some as a "gloom and doom" prognosis, but it isn't. It should be looked at as a challenge.

The first step is to halt all high-rise construction near the beach. It's one thing to move a threatened beach cottage, it's something else to move a multi-story building.

You also need to begin looking into the economics, geology, engineering, and sociology of retreating with the shoreline. Economics is the most ticklish aspect of this, but there are ways that the financial problems could be reduced, through tax breaks, for instance.

DCM: Many people believe, however, and it has been the philosophy of the CRC, that local governments should manage the type, height, and density of oceanfront development through their local zoning regulations. What is special about this case?

OHP: Many of these communities have small year-round populations, with residents who have an economic stake in oceanfront development. You can expect that development decisions will not be based on long-range concerns, like safety, but on short-term economics.

This situation is not unique to North Carolina — I've seen it in most coastal areas. There is a ray of hope in the large numbers of retired people moving into communities as permanent residents. They may be more likely to take long-term interests into account when making decisions. But essentially I am pessimistic about local control. It is an absolute must that the state continue to hold the reigns in this development.

Nevertheless, the CRC has shown a great deal of courage in recent actions. I look forward to it continuing to break new ground on oceanfront issues — both for North Carolina and the country as a whole.



Succeeding at Coastal Management

by J. Parker Chesson, Jr.

When the Coastal Area Management Act was placed before the 1974 General Assembly, many knowledgeable observers said it would never be ratified. Legislation that required the development of land use plans and another type of development permit would be more than legislators, particularly those representing coastal counties, would ever approve. The complex bill was amended numerous times and squeaked through the General Assembly in the waning days of the session.

The same observers, joined by others, predicted CAMA and the Coastal Resources Commission would never be successful. The past eleven years have proven these skeptics to be wrong.

Why has the coastal management program become widely accepted as a valuable part of efforts to control coastal development and to make our coastal region a better place to live? I believe there are several reasons for the program's successes.

Since its formation in July 1974, the CRC has been a unique assemblage of private citizens. My impression, admittedly somewhat biased, is that the commissioners have been more dedicated and harder working than citizens serving on a typical public body. The early days of the program required an inordinate amount of time in basic public relations, explaining what land use planning involved and, on many occasions, what it did not involve. Opponents tried to paint the program as an oppressive program the state was placing on local government and private property owners. Development would be stopped, the tax base damaged, and property rights greatly diminished.

The first two chairmen of the CRC, the late Tommie Eure and David Stick, led intensive efforts to get the public involved in the program — to build better understanding and to help develop the land use plans which local governments were beginning to put together. Without the able leadership of these two men,

the coastal program would probably not exist today.

The coastal program has also been blessed with a very competent and dedicated staff. Anyone who has closely followed the program will attest to the quality of the staff's work. This has been essential in operating the program on a day-to-day basis.

One quality I believe has contributed much to the program's success is the openness and informality shown during the CRC's many meetings and work sessions during the past eleven years. This has enabled the public and local government officials to participate in the deliberations of the commission. This informality is unusual for state commissions and boards.

A special word of praise must be given to the Coastal Resources Advisory Council. This relatively large advisory group, made up to a large extent of local government representatives, was particularly important in the early days of the program when so much effort was devoted to explaining the program and to developing reasonable policies. Without the CRAC, the program would not exist today.

Coupled with all of the above reasons for developing a successful program is the foundation for all our efforts — the rapid development of our coast during the past few decades and all the accompanying problems. All of us have seen the character of many coastal counties change dramatically. Population density has increased, beaches have been encroached on by cottages and multi-family structures, water and waste treatment facilities have been strained to the breaking point, and serious concerns have developed about evacuation before storms.

These are just a few of the issues grappled with by the CRC and local governments over the last decade. And, these pressures will not lessen — they will continue to increase in intensity. It has become easier for coastal citizens, and others across our state, to see the need for some mechanism to control the development of the most rapidly growing part of our state. This need has been translated into stronger legislative support, to the extent that hopefully CAMA will not face the legislative threats it did several years ago.

The coast of North Carolina is unique. It is, also, very attractive. The pressures that gave rise to the coastal management program will not go away. It will be absolutely essential that our local governments and the Coastal Resources Commission continue their cooperative program to guide the future development of our coast.

J. Parker Chesson, Jr. is the president of the College of the Albemarle. An original member of the Coastal Resources Commission, he served as its chairman from 1977 to 1984.

OBSERVATIONS



Challenges for the Next Ten Years

by Derb S. Carter, Jr.

Many former and present legislators regard the Coastal Area Management Act as one of the most controversial pieces of legislation ever passed by the state. The long deliberations and stormy debates concerning the bill were to be expected from representatives of a citizenry attempting to reconcile long traditions of individual property rights with recognition of the public values of coastal resources. The underlying theme of the law which emerged is that, through careful and coordinated planning, development can proceed in the coastal region in a manner which maintains natural productivity and economic and aesthetic values.

Ten years after enactment, the North Carolina Coastal Management Program is a national model of cooperation between state and local governments. Local governments develop land use plans based on broad state guidelines. The state identifies and regulates major development projects in areas of environmental concern. Currently, the areas of environmental concern include oceanfront and inlet hazard areas, regularly flooded marsh, and the immediate estuarine shoreline.

It is becoming increasingly apparent, however, that in order to protect certain public resource values in the coastal zone, the areas of environmental concern are greater than that prescribed by existing regulations. For example, while the regularly flooded marsh and adjacent estuarine shoreline are integral components of fishery nursery areas, the water quality of the nursery area is of equal or greater importance. This water quality is often affected by drainage projects or discharges miles from the nursery area. Many shellfish areas are closed due to runoff from densely developed



barrier islands. Existing setback requirements do not address the density of development and with respect to water quality in some adjacent sounds, the entire barrier island proposed for development is in fact an area of environmental concern. Other de facto areas of environmental concern not yet formally recognized include remaining significant maritime forests, unique natural, historic, and cultural areas, and coastal freshwater wetlands.

As the coastal management program enters its second decade, it is appropriate to reexamine the goals expressed in the Coastal Area Management Act. The principal goal is "to insure that the development or preservation of the land and water resources of the coastal area proceeds in a manner consistent with the capability of the land and water for development, use, or preservation based on ecological considerations." The challenges facing the program include how best to achieve this broad goal in light of the emerging problems of large-scale conversion of forested wetlands to agriculture, intensive forestry, peat and phosphate mining, high density development of barrier islands, and declining water quality and productivity of fishery resources.

I believe that the Coastal Resources Commission, the Coastal Resources Advisory Council, and local governments in partnership are eminently qualified to tackle many of these challenging problems. The commission is carefully structured to represent the coastal region both geographically and politically. Its deliberations demonstrate resolve and an understanding of the complexity of coastal resources and management. The advisory council provides valuable expertise and an important link to local governments. Local governments, after ten years, better understand the importance and value of land use planning.

But perhaps most important, the program has a high level of public support. When federal funding for coastal management lapsed in 1982, the state legislature was called upon to significantly increase the state's commitment to the program. This shift created an opportunity for some to test the water regarding public opinion of the program. Several public hearings revealed overwhelming support for the program and many recommendations to strengthen existing authorities.

These public hearings and some subsequent developments show a developing awareness and under-

Derb S. Carter, Jr. is the director and counsel of the National Wildlife Federation's Southeastern Natural Resources Center.

standing of the importance of effective coastal management by a variety of interests. Commercial fishermen, for example, should be among the strongest advocates of management of wetlands, estuarine waters, and other coastal resources. Until recently, the only likely contact a fisherman had with the coastal management program was a representative stating that a permit would be required for constructing a boat basin and issuance would be unlikely. Now, these fishermen,

pressed by accelerating development and degrading water quality, are asking the state — and specifically the Coastal Resources Commission — to take a broader view and address some of their concerns.

They have been joined by others. As one state legislator from the southern coast put it, it was difficult to respond to a constituent inquiry on why he or she was denied a permit to alter a few square yards of wetlands when corporate

landowners to the north were clearing and draining tens of thousands of acres of wetlands.

The coastal management program has a broad range of authorities to address emerging problems in the coastal region. These authorities, together with continued state and local government cooperation, adequate appropriations, and broad public support, should provide a strong base for facing the challenges of the next decade.

Breaking New Ground

by Donald Bryan

The successes of the first ten years easily could lead to a feeling of invulnerability and complacency; a feeling that the North Carolina Coastal Management Program has established itself by taking on the toughest problems and by fighting off numerous attempts to emasculate it — even gaining strength and support in the bargain. It wouldn't be hard for the program to allow itself a big sigh of relief and expect a future much less contentious than the past; a future more related to routine enforcement and arbitration than to the breaking of new ground.

Many with whom I have spoken believe just that. I believe they couldn't be more wrong.

Several factors argue that the coastal management program should reject a secure and relatively routine, low profile future. Among them are: 1) the tremendous changes, both natural and manmade, being experienced at an ever-increasing rate in the coastal area; 2) a heightened public realization of the interrelationship and overlapping impacts of activities which long have been treated independently and viewed exclusively within one or another narrow regulatory framework; and 3) the fact that the coastal management program would not be serving its intended purpose if it

settled back into the "rocking chair" of routine. In other words, I believe there's a bumpy road ahead.

The coastal issue likely to sport the highest profile in the next few years (even though it might not be the most crucial) will be a continuing conflict between public and private rights on the ocean beach. Erosion will bring closer and closer an explosive pressure to do something or allow something to protect the investment in buildings threatened as the ocean approaches them.

The problem will be exacerbated by sheer numbers as the ocean nears the line of structures built after the beginning of the 1970s building boom and before CAMA setbacks were instituted. There will be a vast difference between dealing with the heat generated by the loss of an occasional building or two and the loss, or potential loss, of fifty or even a hundred at a time.

Another issue I believe will prove almost as demanding and perhaps more crucial to the coastal area and the coastal management program will be a struggle over the true meaning of coastal resource management and how broadly it can be applied. Continued large-scale land clearing, increased farming activity, more and more industrialization, and pressure for more dense coastal development with its attendant sewage and waste disposal, bring closer and closer the day when the means must be found to take a "whole system" approach to regulation. This would allow us to achieve a balance between the diverse interests involved and at the same time provide adequate protection to our coastal resources.

The attempt to find a solution will likely involve the Coastal Area Management Act consistency pro-

visions and is certain to spark philosophical disputes and "turf" battles which will have far-reaching implications.

These are two of the crucial coastal issues facing us in the next five years or so. I believe this forecast is borne out by the Coastal Resources Commission's creation of the Water Quality and Outer Banks Erosion task forces.

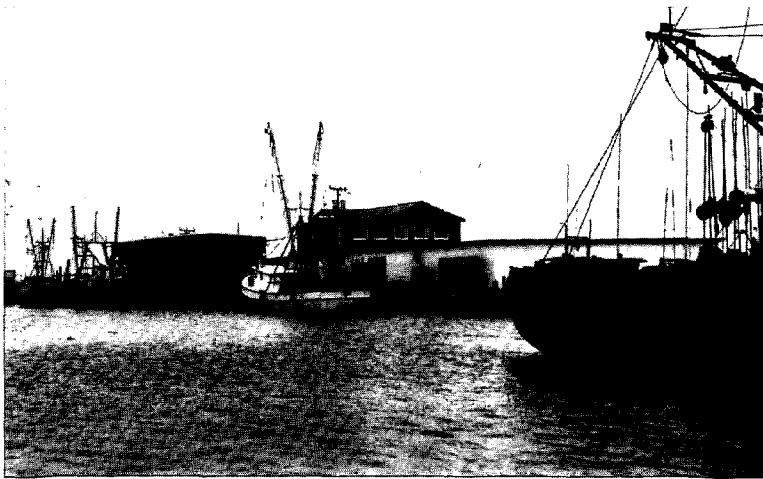


I do not believe these issues can be disposed of as quickly as envisioned in the charge to each task force. These issues will be with us for some time to come and I believe the coastal management program will become and must become more deeply involved in addressing them.

It is not impossible to solve these problems but it will be difficult, to say the least. The temptation will be to side step the issues and convince ourselves we can't do the job without additional resources and authority. The fact is that the coastal management program must move ahead by doing the best it can with the tools available.

I am convinced the program can meet the tests ahead just as successfully as it has met those of the past ten years.

Donald Bryan is the mayor of the Town of Nags Head. He has been a member of the Coastal Resources Commission since 1982.



Water and Our Quality of Life

by Jamie H. King, Jr.

To have any quality to your life, first you have to have the means of life — that is, income. And, no matter what you do for a living, it depends directly or indirectly on your river!

The economic impact of your river is considerable. There's the fish habitat aspect, for example. Fish are food, and also a large commercial employer. Coastal North Carolina fisheries bring many millions of dollars into the economy each year. And to have fisheries, you have to have fish. That means good quality clean water in the rivers and sounds and in the fish nurseries where next year's fish are growing up.

The river is a source of water for industry and commerce, as well. Good quality and plentiful water supplies are one of the first things industries look for in a new location. Municipalities need water for fire protection and for commercial and residential consumption. There must be water available, and of a quality which doesn't have high-cost treatment necessary before it can be used. It is not accidental that towns and industries have located along rivers and streams throughout our history.

Jamie H. King, Jr. teaches biomedical science at the Craven Community College. He is one of the founders of the Neuse River Foundation.

Tourists are a major source of economic input to much of our state, and tourists don't come to water that stinks, or slimes up their bathing suits, or kills the grass on golf courses.

Agriculture depends on water, and good quality water, too. More and more agricultural land in North Carolina is coming under irrigation, either from groundwater sources (wells) or from surface water (streams and rivers). It wouldn't do much good to irrigate with water that's poisonous because of pollution!

Even without irrigation, agriculture depends on groundwater, and groundwater depends on riverwater. Scientists are just now coming to realize the subtle interactions between surface waters and groundwaters. The pollution of a river can destroy the agricultural usefulness of nearby land, whether by saltwater intrusion or by accumulation of soluble salts or simply by being toxic.

The term "quality of life" usually includes the concept of recreation. To many, that includes fishing, boating, camping, wildlife, swimming — things that depend on water being there and of good quality. A beach resort with water covered with slime that dissolved boat bottoms, or poisoned swimmers, would not be much of a resort! Many state parks are set

along rivers and streams, and depend on those waters for their plants and trees, their wildlife, their niceness for camping and hiking, and so forth.

Currently many of our state's rivers and streams are classified "class C" by state government. This means that uses of these waters cannot include drinking, cooking, or swimming. The recreational quality of life is *not* served by having boaters who fall overboard require hospitalization!

Finally, the term quality of life includes the concept of security — the feeling of being sure that tomorrow is a good prospect; that your fire hydrant *will* be able to deliver water tomorrow if needed; your job, your source of income, *will* be there in the future; the recreation you so enjoy *will* be there to enjoy next year, and in years to come for your children.

Security of future is fundamental. How much would that property on the lake or river be worth tomorrow if the water was so polluted as to be unswimmable or unfishable? What business would start or relocate to a place where the water future looked bleak? Security of future is one of the fundamentals of our whole way of life. And it involves both water quality and water quantity.

Water is involved deeply in our quality of life; in every aspect of it. And that involvement is deep and permanent. We are as dependent on our rivers and streams as the fish which live in them. We, too, would cease to be if they were lost to us.

Yet we have the power to destroy them. We have the ability — through modern industrial might, through modern agricultural practice, through our own numbers — to destroy the very resource which makes our quality of life possible.

We have the God-given power of choice, of decision. I hope that we will choose to develop our cities and our industries in a manner consistent with conservation of our natural resources, rather than ignore the potential consequences of today's actions.

I hope we will choose for the future.

What "Water Quality" Means

by Carroll L. Payne and H.O. Golden

We the citizens of Stumpy Point are pleased to know that the General Assembly has given the Coastal Resources Commission the authority to develop a "comprehensive management system" capable of preserving and maintaining the natural production of our estuaries. The estuaries provide our commercial fishing which is the sole reason for Stumpy Point's existence. We hope and pray that the CRC does what is necessary so that communities such as ours can survive.

This village has lived in harmony with nature and our family farmers since its establishment. Our way of life has created individuals with a deep sense of independence and pride; in themselves and country. Standing alone with firm conviction that the maker of the universe will take care of those who work hard and maintain a proper respect for the gift that has been bestowed upon us, we have reaped the bounty and fury of nature.

As the natural system that is responsible for our community is degraded, so is our village. We've spent a lifetime working the waters, paying close attention to the changes in our water quality and the production of our marine life. Hundreds of thousands of acres of wetlands have been drained directly into the estuaries of Pamlico and Albemarle sounds. For a few years it didn't seem to have much effect, but as the drainage increased our marine life died away.

Now the scientists tell us that fresh water and nutrients are causing our fisheries to decline. We can't help but wonder why it took so many years for our educated and professional decisionmakers to discover the obvious. Ten years ago everyone in this village knew that fresh water was killing our seafood. And now to our dismay we have discovered that these pollutants are not regulated by anyone.

Carroll L. Payne is the president of the Stumpy Point Civic Club. H. O. Golden is the chairman of the environmental committee of the Stumpy Point Civic Club.

Our people are not sure that North Carolina wants to save the fishing industry from deteriorating water quality. We are familiar with the studies that have been made by groups such as Sea Grant, the Governor's Coastal Water Management Task Force, Peat Mining Task Force, Water Resources Research Institute, and Coastal Energy Impact Program. These discussions sound promising to all except those of us who see our children and neighbors going elsewhere to find employment because of the poor condition of our fisheries.

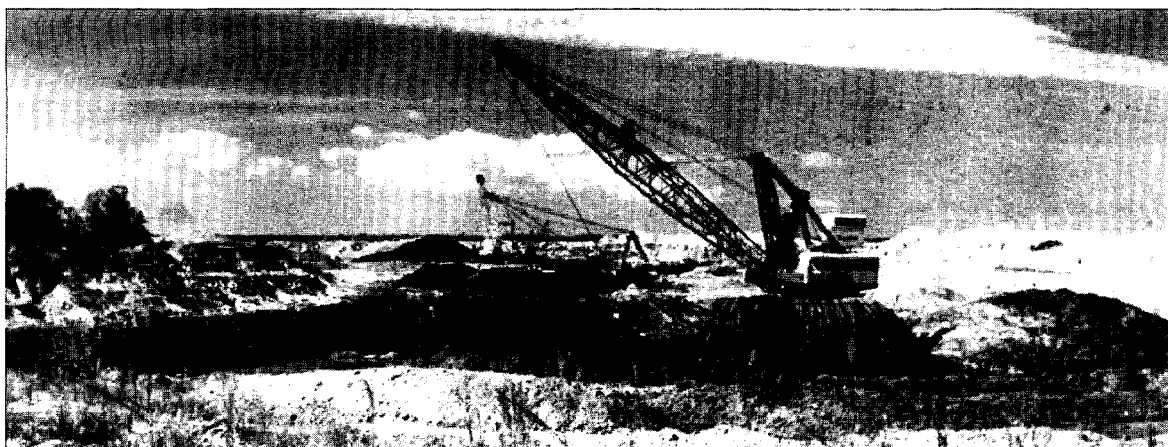
Our community is pleased by the recent donation of 118,000 acres of freshwater wetlands to the federal government and at the abandonment of the peat mining project proposed by Peat Methanol Associates. But we are acutely aware that these actions do nothing to address our existing water quality problems. The formation of a new water quality task force by the CRC brings us some hope, but we urge its members to remember that ac-

tion speaks louder than words. Existing water quality safeguards are grossly inadequate and must be changed.

Poor water quality not only reduces our catches, but acts as a cancer that is killing our community and the pride and future of the people who have worked for it. In ten years the Stumpy Points of coastal North Carolina may only be a memory unless an immediate reversal in water quality trends is forthcoming. We in Stumpy Point now realize that our fate is in the hands of others. For people whose independence is everything, we find ourselves on our knees asking for help from those responsible for providing it.

Never before in the history of the CRC has it been needed by so many people. We hope to one day look back on this period and reflect on how the commission filled the need and preserved a way of life in coastal North Carolina. No corrective action now by our decisionmakers equates to a lack of character given all that is known concerning what is happening to our environment, for who among us would sit idly by and watch as their neighbor slowly starves?





Maintaining the Balance

by Rusty Walker

The North Carolina Coastal Area Management Act program and the state's phosphate industry share responsibility. North Carolina's outer Coastal Plain is a complex interplay of physical, chemical, and biological forces concentrated in topsoil, water, and their interface. The area is a dynamic and balanced environment rich in natural values. Human activity impacts the balance which helps insure some of the values.

CAMA's responsibility is to manage the human impacts so that the values can best be preserved and developed. Phosphate for fertilizer is one of these values along with air, water, wildlife, and beauty. The state's phosphate industry must efficiently recover phosphate and make it available worldwide. It must do so in ways that are least disruptive of the balance in the coastal environment.

In carrying out mutual responsibilities, both the industry and coastal management program have grown together. CAMA's history is well documented elsewhere in these reports. A brief review of the industry's history in North Carolina follows.

Phosphate deposits were discovered near Wilmington as early

Rusty Walker is the manager of public affairs for the North Carolina Phosphate Corporation. He is responsible for all environmental issues involved with its mining and transportation activities.

as 1883, but the extensive higher grade deposits in Florida quickly eliminated interest in further work in North Carolina. Phosphate exploration in the Tar Heel State did not begin in earnest until the late 1950s. American Metals Climax Company identified phosphate pellets in samples obtained from water-well drillers in Beaufort County in the early 1950s and was granted a state lease to further explore under the Pamlico River. The lease was cancelled in 1953. Philip M. Brown, a geologist with the U.S. Geological Survey, reported on phosphate he found while doing groundwater work on the north side of the Pamlico in the mid-50s. In 1957, Dewey Walker, a geologist with Kennecott Copper Corporation, began exploratory drilling on the north side where he found deposits rich and shallow enough to have significant commercial potential.

Kennecott formed the North Carolina Phosphate Corporation (NCPC) with Agrico Chemical Company, a major Florida fertilizer manufacturer, and began buying land for long-term development. Texasgulf Sulfur Company (now Texasgulf, Inc.) began exploratory work in Beaufort County in the late 1950s. Texasgulf made a full commitment to develop open pit mining and processing facilities. Construction began in 1964 and the first product was shipped in 1966 by rail from Lee Creek. Texasgulf has now invested more than \$400 million in

Beaufort County and eastern North Carolina and employed as many as 1,500 people. NCPC's initial development of its reserves began in 1974 and the company has invested approximately \$250 million in the project to date. An additional \$300 million will be required to bring the project to full production at which time the company will employ 500 people.

The Environment

Because the industry does impact the environment in several areas, it was one of the first to be heavily regulated by the state. Together, both the state and the industry have pioneered groundwater studies, capacity use legislation, and regulation to protect coastal groundwaters while permitting the development so needed in the eastern counties. Texasgulf worked with North Carolina State and East Carolina universities in setting up comprehensive studies of the Pamlico River. This continues today to help insure acceptable water quality in this important system which runs through the primary phosphate deposit. These studies and other early cooperative activities helped pave the way for the Division of Coastal Management and the industry to work together on complex environmental problems.

When NCPC started project design engineering in 1974, CAMA was in its infancy. The Department of Natural Resources and Community Development, under then Secretary Harrington, met with NCPC officials and discussed using NCPC as a "guinea pig" to work

our the basis for an "umbrella processing" of state permits. NCPC readily agreed. Both interests benefited from the experiment, which demonstrated that cooperation between parties could solve the myriad problems involved in permitting major projects.

In 1980, when NCPC had to change mine plans and seek ways to recover phosphate in valuable wetlands, the mutual experience in the 1970s proved valuable. The coastal management program worked with the company on a long-term project to see if wetlands could be created to compensate for wetlands lost if wetlands mining were to be permitted.

The most recent example of NCPC and CAMA interaction involved the agencies' first state environmental impact statement under the State Environmental Policy Act. Questions were raised about NCPC's proposed bulk handling facilities at Morehead City. NCPC, the Ports Authority, and the state mutually decided that an EIS under the Division of Coastal Management would provide an established procedure to address the questions raised in the community about the project and its impacts. That EIS has been released and will set precedents for future studies.

"Being the first is not always the easiest way to do things," Ward Grosz, NCPC president for ten years, explained. "But we know that NCPC has benefited greatly in the past ten years from the cooperation and understanding between ourselves and the regulatory agencies.

"As anyone who has followed NCPC knows, our plans have not worked out as we first hoped," Grosz continued. "What we thought would be fast track construction and production has turned into a long struggle with shifting markets and economies.

"We've had our share of frustrations, but overall our experience with CAMA has been fair and increasingly efficient. Our hope is that the people and processes which continue to evolve in CAMA's next ten years retain essential flexibility," Grosz concluded.

The Continuing Struggle

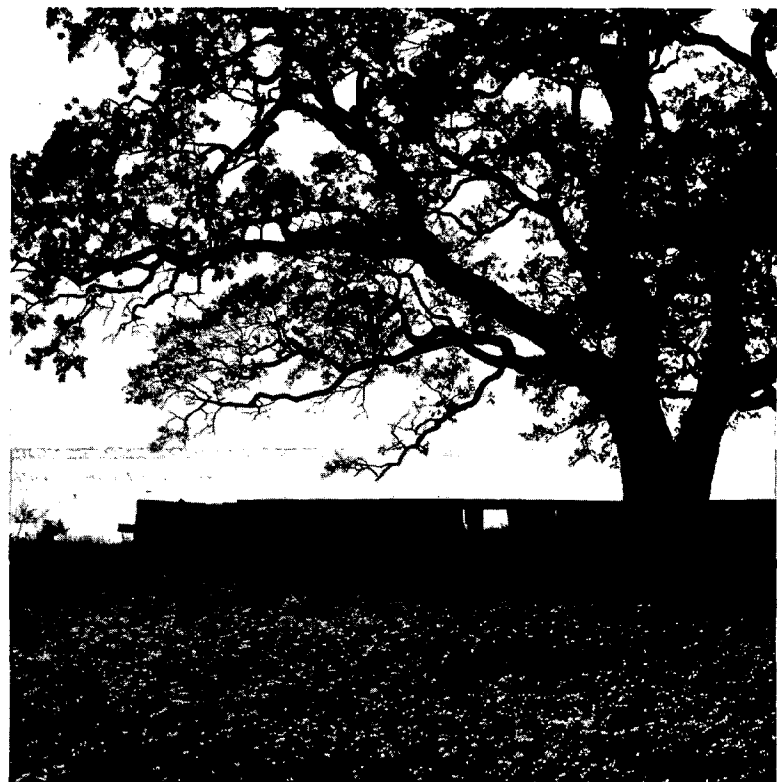
by Bruce Ethridge

There is no way to look at the future of the Coastal Area Management Act without looking at the past. CAMA was born in controversy. The threat of having someone regulate how people could use their property, even though it could cause serious problems for their neighbors, was unthinkable some said. It has caught the scorn of many developers and farmers who resent any restrictions even though those restrictions are for the common good. The developers, with their tremendous influence on the state legislature and local governing bodies, and the Farm Bureau, which represents some farmers, have in large measure prevented the state from providing the necessary protection that we need for our fragile environment.

Bruce Ethridge is a state representative from Swansboro.

As I view the future of CAMA, I see a continuous struggle to maintain this valuable tool for land use planning and protection for our valuable coastal resources. It is not only in our best interest today to protect this resource, but more importantly it is essential that we preserve our natural heritage for future generations. The large majority of the people of North Carolina strongly favor regulations to assist in protecting our environment. If the people will continue to voice their support, we have a good chance of maintaining our Coastal Area Management Act and, hopefully, doing an even better job in the future.

I believe God created us and gave us the responsibility of caring for his creation. We are morally responsible to care for and use our natural resources in such a way as to preserve them.



Farmers View CAMA with Caution

by Hugh Maxwell

Ten years after the passage of the Coastal Area Management Act farmers in coastal North Carolina are still unsure and wary of the program. Ten years from now the situation may still be the same if the program is not better implemented in a fashion that meets our needs.

Farmers in coastal North Carolina are not very concerned about condominium beach development. Our interest in beach access, water quality, disaster planning, and beach erosion is only secondary to our number one concern which is survival. That is not to say we won't fight for our neighbors, the fishermen and wildlife that are so threatened by the wholesale destruction of our environment.

Like the fishermen, the family farmer in coastal North Carolina faces extinction. The economy of northeastern North Carolina has traditionally been dominated by small, inherited, family-held farms. The average size of these farms in 1981 was only 42 acres. But according to research at North Carolina State University, changes in farming practices, operating costs, interest rates, labor costs, government lending policies, state and federal laws which favor corporate farms, misused environmental regulations, marketing disadvantages, land speculation, and rising taxes are wiping out the small farm.

Obviously, CAMA can't address all of the threats to family farms. However, in a region where the economy is so closely tied to the environment CAMA does have much authority to influence many of the conditions that are running us out of business. This fact was recognized by the authors of the act which gave it goals for economic development as well as environmental protection.

The family farmer in coastal North Carolina does not understand CAMA. He does understand government programs that have a direct effect on farming. If the program

addressed issues such as land speculation, corporate farm land clearing practices, and rising property taxes then the farmer would soon become a strong advocate of coastal management. Our association has been in touch with all the major farm commodity groups as well as nu-

Ten years ago when CAMA was passed there was much fear that it would cost us our farms because of expensive environmental regulations. We argued that farming is necessary, and that our farms were long established before many of the environmental problems arose that resulted in passage of the Act. But the segment of the agricultural community that cares more about tax write-offs and investment credits than productive farming took ad-



merous farmers and we find strong support for stopping the flow of our land to non-family farm corporations and foreigners.

My son farms the land that our family is lucky enough to own. Most young people today don't have a chance to get into farming because of how expensive the land has become. I thought about this fact as I sat at a recent public hearing and heard a consultant for one of the large corporate farms talk about how their operation had increased property values and the tax base for our county. That same company has turned around and sold their overly priced land to other corporations, pushing up the cost of farmland in general.

vantage of our concerns, and told the public that they were also a part of the farm community and deserved the blanket exemptions that we had received. As a result CAMA turned its back on the true farm community.

With all the misinformation that has been generated about CAMA during the last ten years, gaining the support of the farm community will not be easy. The program must first come to our farms and hear our needs. It then must become an advocate for our industry. Farmers are the backbone to many of our coastal communities. They could become the backbone to CAMA if the program reaches out to our needs.

Hugh Maxwell is president of the North Carolina Family Farm Association.



Full Citizen Participation a Must

by Todd Miller

Ten years ago the authors of the Coastal Area Management Act devised a resource management program with ambitious goals for citizen participation. Guidelines were established for the composition of the Coastal Resources Commission and its advisory council so as to assure that different coastal interests were represented. Moreover, the initial implementation of the program was carried out in one of the most open forums ever devised by government.

All this was necessary because coastal management was a radical idea for North Carolina. A slim majority of the legislature supported the program. Many coastal citizens and their elected officials were openly critical of an initiative that they saw being selectively applied to their jurisdictions.

Aggressive efforts to take the program to the people appear to have paid off. In 1982 elected officials and citizens turned out in force to support the program during a legislative review. For the first time in its history coastal management seemed to be more than just laws and regulations. The program appeared to be the focal point for a powerful citizen movement.

Yet when the North Carolina Coastal Federation recently made a presentation before the Hatteras Island Business Association, our support for coastal management came under angry fire while our activities to protect water quality drew active support. This inconsistency results

from ineffective communication and community outreach about the purpose of the coastal management program. The members of this association greet hundreds of thousands of tourists annually. They should be a tremendous asset rather than a liability to coastal management.

Effective public involvement has long been recognized as a formula for survival and success of government programs. Perhaps the best example of a well organized citizen participation effort is the Agricultural Extension Service. In that program, county agents have developed close relationships with individuals and community leaders. They are able to provide direct one-on-one education on a variety of issues.

Public participation efforts need renewed emphasis if North Carolina's coastal management effort is to survive its tough tests ahead. Five measures that would increase citizen involvement are listed below.

- Diversify appointments to the Coastal Resources Commission and its advisory council to better represent the demographics of coastal North Carolina.
- Conduct frequent educational workshops in coastal communities working with local civic associations to develop a greater understanding of coastal management initiatives. Many communities are more than willing to provide dinners and large crowds to meet with program representatives who will listen to their needs.
- Tap into the traditional means of communication in coastal North

Carolina such as churches, fish houses, farm supply dealers, VHF radios, and stores. Develop community contacts that are willing to distribute program information through this network. Don't depend on newspapers, television, or radio because they are not effective in building support for a program as complicated as coastal management.

- Experiment with commission meetings. Meet in settings more representative of coastal North Carolina such as its various community centers, schools, churches, and other public buildings. Conduct some business at night when working people are free to attend. Make sure that visitors to the meetings can understand what is happening. Provide registration for each meeting to develop a mailing list of interested public and designate a person to answer citizen questions.
- Hold training sessions about coastal management for Agricultural Extension agents, district conservationists, Sea Grant specialists, fisheries inspectors, and other public employees that deal on a daily basis with citizens.

Increasing population pressures will intensify coastal resource management conflicts in North Carolina. The seriousness of these problems will force the coastal management program to make increasingly controversial decisions in the years ahead. Not everyone will be happy. As a result there will be renewed and more vigorous efforts to dismantle the coastal management program.

In contrast, the Coastal Area Management Act can become one of the rare pieces of legislation that enjoys so much popular support that attempts to weaken it would be futile. Aggressive constituency building by addressing the widespread public concern that our coastal heritage is slipping away runs the risk of making new enemies along with friends. But just as in Shakespeare when Brutus was misled to stab his friend Julius Caesar by the artful appeal of his enemies, the same fate might be in store for coastal management if its potential backers continue to remain misinformed and disassociated from the program.

Todd Miller is the executive director of the North Carolina Coastal Federation.

Protecting Coastal Archaeological Resources

by Thomas D. Burke

The shores, waters, and inland areas of North Carolina hold a wealth of information about the past in the form of archaeological sites. Each site, whether composed of stone tools, bits of pottery, or remains of a shipwreck, reflects some aspect of past human activity. These material remains are important since, in many cases, they represent the only information we will ever have about ancient Indians, early explorers, or settlers. They are important because we can learn about centuries of life on the coast only when archaeologists have an opportunity to examine the contents of a site.

All archaeological sites are fragile and non-renewable resources. They are easily disturbed to the point where their information content is drastically reduced. Unlike some plant or animal species which can be relocated or protected to foster population growth, archaeological sites are non-renewable; the people and cultures who left the archaeological evidence are gone and can never be recreated totally.

Coastal archaeological sites are faced with certain and complete destruction in the future as a result of erosion and modern development. This process has been happening for years. Presently, the danger is closer than ever, as the need for recreational and summer homes has spread beyond established towns and villages. For example, many of our earlier coastal towns were established atop old Indian villages because the two cultures shared common needs for good soil and ready access to potable water. But in recent decades modern development has moved into other areas of the



coast where Indians and early settlers also chose to live many years ago.

The Coastal Area Management Act provides for the consideration of coastal archaeological resources through three methods: the permit review process, designation of Cultural and Natural Resource Areas of Environmental Concern, and local land use planning. The Division of Archives and History uses these options to ensure the protection of significant resources, as is explained below.

Since 1980, archaeologists from the Division of Archives and History have been examining various CAMA permits under provisions for interagency permit review. When received, the permit area is located on maps which show known archaeological sites. While these locations are generally very accurate, they do not represent the whole picture. Most coastal counties are very poorly known in terms of how many and what kind of sites are present. This can be a cause for much concern for, although archaeologists may not know where all the sites are, they can often predict with accuracy where sites should be.

If a site is found within the permit area, it is recommended that the applicant have a qualified archaeologist evaluate the site for its significance and, if necessary, to exca-

vate and recover important information. Similarly, if sites are suspected but unknown, a survey to look for and evaluate such sites is recommended.

This system has a number of problems. Review by archaeologists comes fairly late in the overall permit process, usually after construction plans and work dates have been set. Done properly, archaeological excavation is a fairly slow and deliberate process. It can also be somewhat expensive if a great deal of excavation is required. That is an additional complication because the applicant would face unanticipated extra cost.

The present review system is necessary and should continue. But, some of these problems could be addressed if either the Division of Coastal Management or the Division of Archives and History had additional archaeologists whose efforts could be devoted solely to CAMA counties. Also, funds should be made available for coastal surveys to locate and evaluate archaeological sites. The Division of Archives and History has some limited federal funds each year for such purposes. But other funding sources, including the coastal program, should be considered.

Designation of an archaeological site as an area of environmental concern, or AEC, under the provisions of the Coastal Area Manage-

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ment Act, is another protection tool. Despite decades of destruction by natural and human actions, there remain numerous archaeological sites of sufficient importance to warrant AEC designation. Although this has only occurred at one archaeological site to date, it continues to be a highly desirable option.

In the event of such designation, a management plan is created which guides decisionmaking processes when and if some activity — most likely a development permitted under CAMA — might impinge on the quality of the site. Designation of an area of environmental concern would preclude the "eleventh hour" situation that exists with permit review when schedules have been set and time is costing money. Anyone wishing to apply for a development permit within an archaeological AEC would be made aware of the management plan at the outset.

An AEC designation is presently of limited potential as a planning tool. Such designation requires sufficient archaeological data to have a site approved for listing in the National Register of Historic Places.

Given the paucity of information mentioned earlier, this is difficult, time consuming, and somewhat expensive. It must also be stressed that the purpose of the AEC designation is to provide for the careful protection and management — not complete preservation — of the archaeological resources.

Perhaps the most effective means of monitoring threats to — and controlling unnecessary destruction of — archaeological sites is through land use plans. As developed by local governments, land use plans should state a clear policy toward archaeological resources. For example, the plan could indicate that a county or town wishes to preserve important archaeological resources and will use zoning categories such as "conservation areas" to protect them. The land use plan should refer to any sites listed on the National Register of Historic Places and identify measures the city or county will take to locate, evaluate, and protect archaeological resources. Information on National Register and other archaeological sites is available from the Division of Archives and History.

The local governments should

also establish ongoing programs of survey and evaluation (including nomination to the National Register as appropriate) using grants or appropriations from local, state, or federal sources. Another option is to nominate as AECs all the sites approved for listing or listed on the National Register.

The methods for protecting coastal archaeological resources are in place now. The key to ensuring that ancient coastal communities can be excavated and studied is coordinating the use of the three methods described here, and making people aware of the importance of protecting our coastal heritage.

It is the local officials, planners, and residents who write land use plans, grant permits for most development, and determine the patterns of growth in their towns and counties. Land use plans, zoning, and development permits in areas of environmental concern are all useful approaches to planning for the protection of valuable cultural and historic resources. However, they will be virtually worthless if we do not publicly recognize the need to protect those resources, and begin to do so now.

Conserving Coastal Ways of Life

by Robert Daland

What CAMA did *not* do ten years ago was to insure the protection of the existing coastal environment in perpetuity without degradation of its barrier islands, estuaries, wetlands, and wildlife habitats. Nor did it establish policies to preserve the traditional way of life for family farmers, fishermen, small retailers, and service workers scattered along the roads and waterways of the region. What CAMA *did* do, and superbly, was to create a set of institutions which would allow rational and farsighted consideration

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of the choices we have to make about our coastal future.

When we look closely at these choices we can see that we have to

choose between the long-run versus the short-run advantage. There is no way on this earth to achieve both. Until recently enlightened thinkers have believed that man can dominate nature, and that we can do it simply by inventing more technological solutions. By now we know conclusively that each new technology is paid for by degrading one more bit of the environment. We split the atom, strip mine our minerals, pollute our waters, cut our forests, erode our soil, poison the air, make the rain acid, and even seem ready to cook ourselves in an ever warmer greenhouse.

These dire consequences, however, come only slowly. When the Dare County beaches became one long urban strip, we turned to the relatively pristine Emerald Isle. With the intense development now happening there, we can look to Currituck for relative isolation. The mainland wetlands are disappearing, but they have been doing that for the past two centuries. Fish and shellfish are losing their

nursery areas, but we still see large catches obtainable through use of new technology. The estuaries are polluted, but we can still swim in them, sail on them, and fish in them. So why need we adopt harsh policies to reverse these long-range trends? In what remains of the life of the average member of the General Assembly nothing catastrophic will happen.

But the other truth is that our coast is becoming developed very quickly and we have no policy in place to alter this trend — nor are we actively considering one. We have changed one thing, no longer do we permit destructive hardening of the beaches. But even this admirable policy has recently begun to chip away. Growth can be controlled by local governments under the planning system instigated by CAMA, but experience shows conclusively — look at Florida for example — that local zoning does not inhibit development. The coastal mainland, including its freshwater wetlands, is being developed for forestry and agriculture by vast corporations. Natural ecosystems are disappearing in the face of monoculture. We are quickly creating the coastal future by inducing radical changes which are the choices of private entrepreneurs. They have every right to do this. The only way a private business can be successful is to exploit every opportunity using a short-run perspective for the purpose of the annual profit.

Our *real* question, then, is whether the coastal future of North Carolina should be determined, in the *long* run, by choices of individual property owners alone.

An alternative future for North Carolina's coast is a conservative one, but paradoxically it requires forceful implementation of a new set of policies. The values it would implement are simply those traditionally associated with our coast. The first of these is the preservation of sufficient tracts of wildlife habitat to insure permanent continuity of the animal and plant species now extant, including the entire range from microscopic to game species. Ecologists can determine these needs based on scientific criteria. If this principle were followed, it would automatically pro-



vide for the recreation uses inherent in hunting, fishing, bird watching, hiking, camping, and the like. It would also protect ecosystems required for science study, as well as the genetic diversity and gene pool that can continually be drawn on for new pharmaceuticals and other discoveries in biological sciences. It would also go much of the way toward resolving the issue of the use of the wetlands — they are the critical habitat for many of the species in question.

The second value to conserve is the traditional social structure, including the family farm, the fishing communities, and the small trading and service centers which serve them. The traditional coastal resident is part farmer, part fisherman, part mechanic, part hunter, and part artisan — in varying mixes. He uses the public lands and waters as an integral part of his life, and it is a good life. This lifestyle is disappearing under the onslaught of the urban industrial society.

Admittedly tourism and recreation is by now a "traditional" aspect of coastal life, and it should be. Without visitor facilities it would be difficult for the North Carolina public (which after all owns the tidal beaches, about half of the barrier island chain, the estuaries, and the tidal marshes), to come and enjoy its public lands. The point is not to discourage tour-

ist facilities, but rather to encourage those which facilitate enjoyment of the natural features of the coast, especially the beaches. Those which are there for their own sake — amusement parks, honky tonks, bars, casinos, and the like — need not be accommodated. The National Park Service provides a workable model of the kinds of facilities needed to enjoy the natural environment.

I know it is a radical suggestion that government planners be charged with the job of preserving traditional values against the exploitative forces of an unrestrained economy. But I daresay it is what most coastal residents want, and what we inlanders who love the coast want as well. We are only suggesting more of the same use of governmental power that is already exercised through such controls as zoning, beach setback lines, and the major and minor permit system of CAMA. What we need is to build on the outstanding CAMA system already in place with its careful legal safeguards, its tradition of public participation in decisionmaking, and its science-based staff work.

To move in the direction which I have outlined two initial steps are crucial. The first is to extend the CAMA permit system to include the entire area of the barrier islands — they are *all* areas of environmental concern. The permits would be based on a determination of carrying capacity. Not maximum conceivable carrying capacity, but rather carrying capacity taking into consideration the environmental and social values cited above.

The second step is to include all of the freshwater wetlands as areas of environmental concern and to control all development there (with no kinds exempt) according to the same two precepts.

These moves would require legislation, and it is the job of the General Assembly to decide which road to take. By inaction it is choosing to go the way of Florida and New Jersey. By legislation it can choose to recognize the success CAMA has achieved in a short ten years, and opt for what most North Carolinians want. In another decade or two it will have been too late. I cast my vote for my grandchildren.

Coastal Ecosystems Management

by B.J. Copeland

The management of North Carolina's coastal zone is likely to change in the future, becoming even more challenging and exciting. This change will come both in what we manage and how we manage.

The complexity of coastal ecosystems makes their functional and interacting characteristics difficult to understand. This lack of complete understanding presents a challenge in developing effective management schemes. I see this challenge to be the most exciting aspect of future activities. We are making tremendous progress in our accumulation of knowledge about complex

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coastal ecosystems. Although the lack of understanding of certain functional characteristics is still a limiting factor in our knowledge, public understanding of how coastal ecosystems function is increasing at a rapid rate. As the public becomes more aware of our ecosystems, the more likely it will accept our management programs as more effective.

From a scientific viewpoint, the integration of ecosystem response and functions are the most difficult aspects to manage. For example, land use activities on the watershed affect marsh production, which in turn impacts estuarine functions that regulate fishery yield and contribute to the nearshore ocean. We do not yet have adequate quantitative information about this horizontal interaction to implement effective management programs that will guarantee optimum protection. I see this as the area where scientific inquiry has its greatest potential for closing the gap during the next ten years.

As we acquire more and better information, innovative techniques

for legal and planning programs involving coastal management will also march forward during the coming years. Legal and planning innovations will need to better account for nature's time sequence and natural variability. Research in the legal and planning disciplines should work toward developing management systems better equipped to deal with these natural factors. The same regulation, plan for law, for example, does not always apply to the same type of coastal ecosystem at different locations or during different times of the year. I see research in the legal and planning disciplines discovering new ways to affect management. This will present even greater challenges for the manager.

As we experience continuing integration of professional disciplines and increasing public understanding of nature's complexity and value, we will also implement more effective coastal management. I look forward to the next ten years being more exciting and effective than the first ten years.

Intelligent Growth

by William deBuys

North Carolina will add nearly a million people to its population over the course of the present decade. This growth will bring our state economic blessings, but it will also pose many of our most difficult problems. It will lead to the commercial development of increasingly fragile and marginal environments, and it will tax the carrying capacity of both land and water resources.

Nowhere will these pressures be greater or potentially more damaging than in our coastal areas where the productivity of estuaries and wetlands and the beauty of important recreational areas are at stake. But to reject growth is not a valid or desirable alternative. The challenge of the future in coastal area management is not whether to al-

low growth, but how to make the process of growth as intelligent as possible. Our goal must be that neither our resources nor our quality of life be sacrificed.

This is the goal that The Nature Conservancy has pursued throughout the state in the protection of natural areas. We work to assure that our highest quality wildlands are reserved in their natural state for the sake of education, research, enjoyment, and most broadly, the preservation of natural diversity. These purposes, we believe, represent the highest and best use of these lands.

In recent years the Coastal Resources Commission has been a most effective ally and a leader in its own right in this effort. Through the North Carolina National Estuarine Sanctuary it has succeeded in providing permanent protection for four of our most important coastal natural areas: Zeke's Island, Carrot Island, a portion of the Currituck Outer Banks, and Masonboro Island. If we are to succeed in making the process of coastal growth as intelligent as it should be, the CRC and the Division of Coastal Manage-



ment will need to build upon these past successes and to continue to acquire important wetland and estuarine areas.

By itself, this is a large task. Combined with the CRC's and DCM's equally important regulatory and planning functions, it makes for an extremely broad and challenging set of duties.

Thanks to the Coastal Resources Commission and the Division of Coastal Management, North Carolina has accommodated growth in its coastal areas far more intelligently during the past ten years than it otherwise could have. With what has been learned from experience and with adequate funding and public support, these agencies should be able to serve the state still more effectively in this critical task in the decade to come.

William deBuys is the director of the North Carolina Nature Conservancy.



The Future of Coastal Management

by Thomas J. Schoenbaum

In the early 1970s I was a part of the effort to pass a coastal zone management act in North Carolina. It was at that time an immense political struggle, but we succeeded in passing the Coastal Area Management Act of 1974. Passage of the legislation was only the beginning of a program. It took four long and hard years of additional work to mount a program and to get it to the point where it merited approval by the federal government. In addition, during this time we were fighting in the courts against an effort to declare CAMA unconstitutional. Thus, 1978 was a banner year. It was the year that CAMA was approved by the federal government as well as declared constitutional by the North Carolina Supreme Court in the case of *Adams v. North Carolina*, 249 S.E. 2nd 402 (N.C. Sup. Ct. 1978).

Those early years of CAMA in the 1970s were a struggle to survive. Coastal management was politically unpopular in many quarters, and we had to show that the program could actually do some good to preserve coastal resources without inhibiting economic development. I believe that these early years were crucial and that through the efforts of many people we succeeded in these goals. As a result CAMA has attained a certain degree

of acceptance, even in coastal North Carolina. The program has also matured to the point where the future, I believe, will be much different than the past.

The first benefit of CAMA that will carry over into the future is that, by and large, people on the coast now have an understanding of why CAMA is needed and what the program is trying to accomplish. It is not a question of stopping economic development, but rather working with the natural forces on the coast in order to attain the right type of economic development in the right places and to preserve a balance between preservation and development for the enjoyment of the people of the region as well as the many visitors who come to enjoy the coast. Largely through CAMA, people have become aware of the value of marshlands to fisheries and the fact that there are geological and other forces going on that cannot be denied or controlled by man.

This realization by many people has, to a great degree, muted the bitterness between environmentalists and developers that existed in the past. Both groups now realize to a greater extent than ever before that they must work together and that coastal management will not succeed in an atmosphere of confrontation. Thus, in the future I see a greater willingness to compromise and a greater degree of cooperation than in the past.

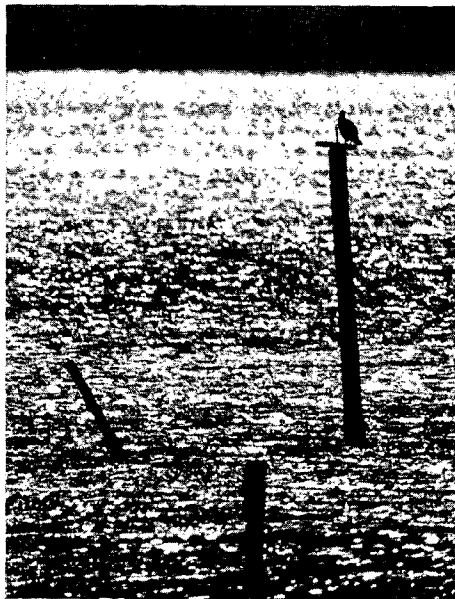
Another trend that is a healthy one is a lesser degree of reliance on

regulation and more reliance on incentives and other tools to preserve coastal resources. At the inception of the CAMA program, it was thought that regulation would be the primary means of coastal management. This regulation proved unpopular and, to a large degree, unsuccessful. Regulation is still important, but through the efforts of many people the bureaucratic barriers have been reduced and there is less confrontation between regulators and the people. For example, the Corps of Engineers Section 404 program is now working in harmony with the CAMA program to largely eliminate duplicative federal and state regulations.

Another development on the federal level was the enactment of the law establishing the Coastal Barrier Resources System consisting of undeveloped coastal barriers on the Atlantic and Gulf coasts. This new law prohibits any new federal expenditures or financial assistance for development of this system and it amends the National Flood Insurance Act to prohibit the issuance of new federal flood insurance for any new construction or substantial improvement of structures located within the system. This act is premised not on regulation, but on removing the incentives to develop areas that should be preserved. This is a healthy alternative to regulation. This incentive approach can be combined with an acquisition approach to preserve areas of the coast with minimal resort to heavy-handed regulation.

Finally, CAMA has contributed to giving the people of coastal North Carolina a renewed sense of pride in the beauty and resources of their region. This new sense of pride has helped them realize the uniqueness of the area and the way that their lifestyles are related to the characteristics of coastal North Carolina. This realization that the lifestyle of people living in the region depends to a certain degree on the preservation of these resources and a healthy balance between development and preservation has contributed to the political acceptance of CAMA and will continue to be the strength of the coastal zone management program in North Carolina in the future.

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CREDITS

Striking a Balance, Reflections on Ten Years of Managing the North Carolina Coast is published by the N.C. Department of Natural Resources and Community Development, 512 N. Salisbury Street, Raleigh, N.C. 27611-7687.

Financial support for this publication was provided in part by a grant under the federal Coastal Zone Management Act, administered by the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration, Washington, D.C.

Edited by Kathryn Henderson, Division of Coastal Management. Design and illustration by Jill Miller, Division of Coastal Management.

Photos by: Clay Nolen — cover (top right), pp. iv, 37, 39; Division of Travel and Tourism — cover (bottom left); Rex Gary Schmidt — cover (bottom right); Jack Dermid — cover (top left), pp. 8, 14; Division of Archives and History — p. 6; Jim Page — pp. 12, 15, 35; David Owens — pp. 7, 17, 23 (right); Ken Taylor — p. 29; Kay Frazier — p. 30; Larry Goodwin — p. 32; Jim Lee — p. 33; Dr. Thomas Loftfield — p. 36; Wildlife Resources Commission — pp. viii, ix, xi, 2, 5, 16, 27, 31, 40, 41, 42, 43; Division of Coastal Management — pp. 11, 13, 18, 21, 22, 23 (left), 24, 28, 34, 38.

One thousand copies of this public document were printed at a cost of \$3,330.00 or \$3.33 per copy.

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